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Bell Telephone MAGAZINE

1922 1952

• *Three Decades of Publication* •

Overseas Telephone Service Is Twenty-five Years Old
HENRY T. KILLINGSWORTH

The Telephone Looks to the Future • GEORGE L. BEST

Long-Range Business Policies: A Case Study
KEITH S. MCHUGH

Meeting the Service Needs of Service Men and Women
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How the Telephones of the World Are Distributed
ELIZABETH WRENSHALL

American Telephone & Telegraph Company · New York

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Three Decades of Publication, *The Editors*, 5

Overseas Telephone Service Is Twenty-five Years Old, *Henry T. Killingsworth*, 7

A Great National Resource, 18

The Telephone Looks to the Future, *George L. Best*, 19

Index Now Available, 27

Long-Range Business Policies: A Case Study, *Keith S. McHugh*, 28

The Old Ginkgo Tree, 38

Meeting the Service Needs of Service Men and Women, *Justin J. Murphy*, 39

How the Telephones of the World Are Distributed, *Elizabeth Wrenshall*, 49

Running into People, *Tom Seddon*, 56

A Medium of Suggestion & A Record of Progress

Judson S. Bradley, *Editor*. *Published four times a year for the supervisory forces of the Bell System by the Public Relations Department of the* American Telephone and Telegraph Co., *195 Broadway, New York 7, N. Y.* Cleo F. Craig, *President;* Carroll O. Bickelhaupt, *Sec.;* Donald R. Belcher, *Treas.*

Who's Who & What's What

in This Issue

IT SEEMS to be characteristic of Long Lines people that they move around as they move ahead. Certainly HENRY T. KILLINGSWORTH'S telephone career bears out that observation. He joined the Department as a technical employee in 1919, and worked on matters concerning inductive coordination in Atlanta and other parts of the South for six years before moving to New York as an engineer. His subsequent moves and responsibilities followed this pattern: to Cleveland in 1928 as division plant engineer; to Denver in 1930 as division plant superintendent; back to New York in 1940 as general plant supervisor; to Atlanta in 1945 as general plant superintendent, in conjunction with the formation of the Southern Area; and to New York again in 1948 as general manager of Long Lines. He became top man at Long Lines in 1949 when he was elected a Vice President of A. T. & T. and placed in charge of the Department. (The picture on page 6 is from Black Star, the one on page 10 is from Philip Gendreau, and those on pages 14 and 15 are from Ewing Galloway.)

THE TOPIC and scope of GEORGE L. BEST'S contribution to this issue indicate in some degree how broad are his vice-presidential interests in the field of business research affecting the future of the telephone industry. His first telephone job was with the New York Telephone Company, in 1922, as an assistant engineer in the Commercial Department. He moved through rate and other commercial positions until 1929, when he became general commercial engineer in Brooklyn. Eight years later he transferred to the Commercial Division of A. T. & T.'s Department of Operation and Engineering, and became successively rate engineer, commercial engineer, and assistant vice president. In 1946 he was elected Vice President of the Western Electric Company, in charge of patent licensing, and in 1948 was made Vice

Henry T. Killingsworth

George L. Best

Keith S. McHugh

Justin J. Murphy

Elizabeth Wrenshall

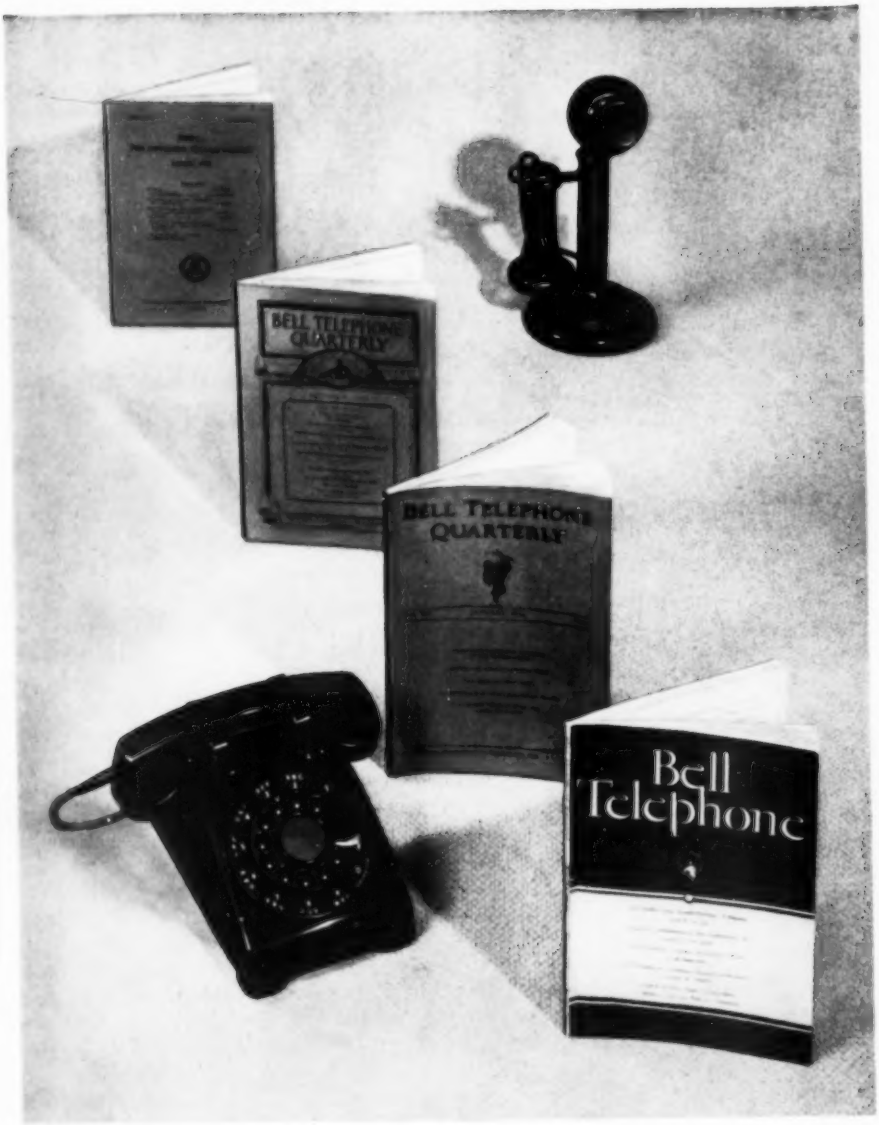
President—Finance. He returned to A. T. & T. as Vice President in 1950, and now heads "Administration-B" Department. With Keith S. McHugh, he contributed "The Bell System's Interest in Program Television" to this MAGAZINE for Spring 1944.

ENTERING the American Telephone and Telegraph Company in 1919 as a clerk, KEITH S. MCHUGH became within a few months an engineer in the O. & E. Department. From 1921 to 1925 he was general commercial engineer of the Chesapeake and Potomac Telephone Company in Washington. For the next four years he was with the New York Telephone Company as general commercial manager, first in the Company's Upstate and then in its Long Island Area, and as Vice President (Public Relations). In 1929 he returned to A. T. & T. as commercial engineer, was appointed an assistant vice president in 1934, and was elected a Vice President in Administration in 1938. In 1940 he was appointed Vice President in charge of Public Relations, and two years later became Vice President in charge of Accounts and Finance. He was elected President of the New York Telephone Company in 1949. Mr. McHugh's interest in civic affairs and business associations is exemplified by his address to the American Management Association. His most recent contribution to these pages was "Bell System Patents and Patent Licensing," in the Winter 1948–49 issue.

BETWEEN 1929, when JUSTIN J. MURPHY began his telephone career with the New York Telephone Company, and 1945, when he transferred to the A. T. & T. Company, he had been business office representative, field sales supervisor, office manager, local manager, and district manager—all in the Manhattan-Bronx-Westchester Area. He was then for about six months in the Commercial Division of A. T. & T.'s O. and E. Department, in the personnel section. Returning to the New York Company in 1946, he was division manager successively in the M-B-W and Long Island Areas. Then, in 1951, he came back to O. & E., where he is now sales and servicing engineer. He and the men reporting to him have inspected 80 per cent of the large camps, as well as many of the small installations, of the kind he describes, and have traveled between 75,000 and 100,000 miles in visiting them and the telephone companies in whose territories they lie.

MUCH of the information received from

(*Continued on page 27*)



THREE DECADES OF PUBLICATION

A copy of the first issue of this quarterly periodical appears at the upper left in this picture. Its dress was modest gray and black, and it was dated April 1922. A more elaborate cover in gray and blue was standardized in October 1924, and was succeeded in January 1934 by one in two tones of blue. "Quarterly" became "Magazine" in January 1941, and the current cover, using a different color scheme each time, was adopted with the first issue in 1943. These changes in cover design during thirty years suggest the editorial changes which have taken place in the same period.

Three Decades of Publication

THE FIRST NUMBER of the BELL TELEPHONE QUARTERLY appeared in April 1922—just thirty years ago.

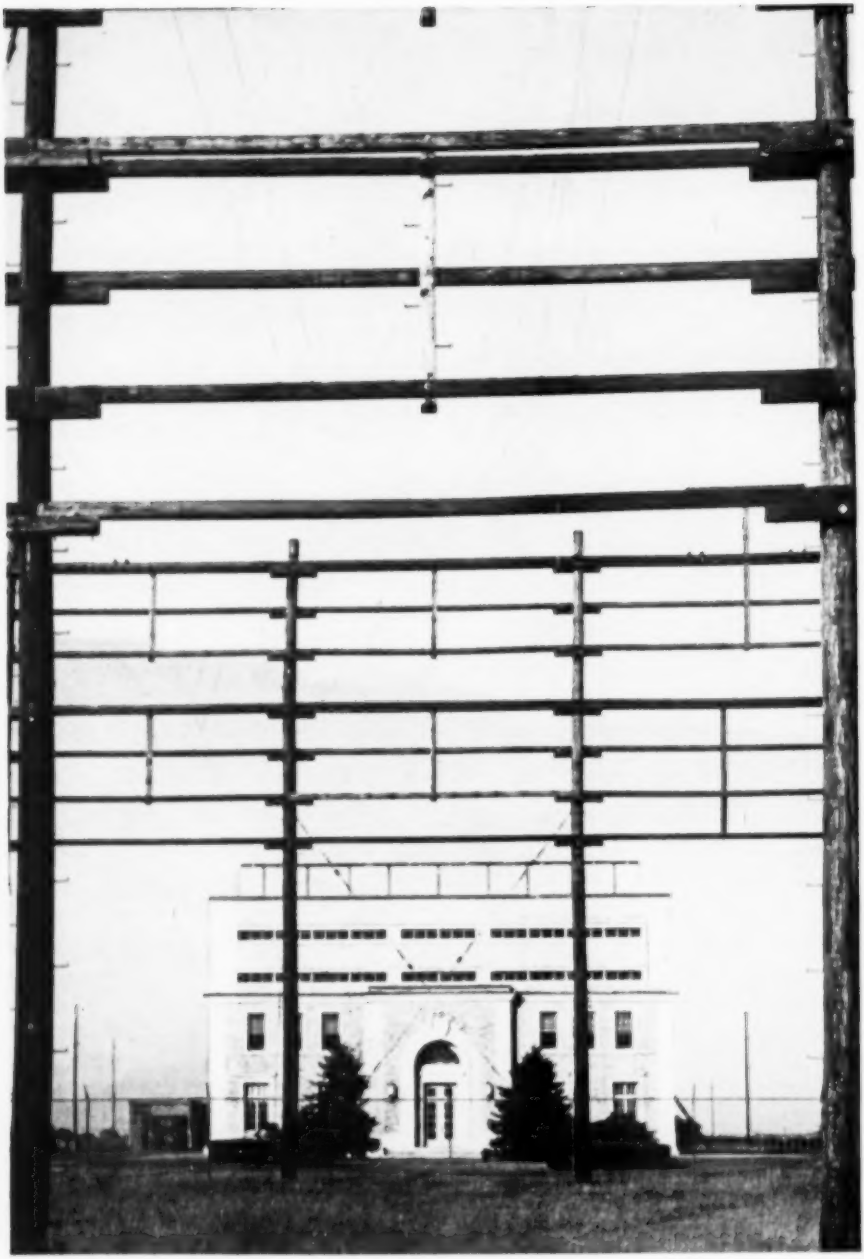
In his "Foreword" to Volume I Number 1 (shown at the upper left on the opposite page), President Harry B. Thayer of the American Telephone and Telegraph Company characterized the Bell Telephone System as a young, active, and progressive institution, continually doing new things. It would be the function of the QUARTERLY, he said, to keep the officers of the Bell System Companies informed about important new things of every kind. He called it "a medium of suggestion and a record of progress," and those words have appeared on the first page of every issue since that day.

This publication has tried to keep pace with what is still a young, active, and progressive organization. The succession of cover designs illustrated at the left may perhaps suggest that there has also been editorial progress within them. Indeed, the name was changed from QUARTERLY to MAGAZINE in 1941 as more representative of its broadening interests.

The motto Mr. Thayer bestowed upon us thirty years ago has done good service. We have recorded and described Bell System progress of many kinds, and that in itself has made the publication a medium which suggests how forward-looking is the organization, how manifold are its contributions to the life of our nation, and how important is the work of every one of us. This MAGAZINE hopes, therefore, to continue to serve as

A Medium of Suggestion and a Record of Progress.

THE EDITORS



The main radio telephone transmitting station at Lawrenceville, N. J., seen through a framework of transmission lines leading to the various antennas

A Single Link between New York and London Has Grown In a Quarter Century to Connections with Ninety Countries And Territories Which Handled 900,000 Calls in 1951

Overseas Telephone Service Is Twenty-five Years Old

Henry T. Killingsworth

THE SILVER ANNIVERSARY of the Bell System's overseas telephone service occurred on January 7, 1952. Since that day twenty-five years ago when New York and London were first connected by voice for commercial telephone service, this service has spread to the farthest reaches of the globe, and now is available to almost all the telephones in the world. Only 2,300 overseas connections were made in 1927, but in the twenty-four ensuing years this annual usage has increased until 900,000 calls were established during 1951 with the 90 other countries and territories now reached by the service.

Many people are inclined still to think of talking across the seas as something rather new, yet overseas service has actually been in operation for one-third of the entire life of the telephone. Despite differences in time or language, despite atmospheric conditions that affect radio-telephony more than other means of communication, and despite other special problems related to this service, it has become an effective and important factor in the business, political, and social ties between nations.

The initial New York–London call in 1927 was the successful culmination of the long period of experimentation begun just after the high-vacuum tube was developed in 1914. The service was soon extended to all the United States over the nation-wide network of toll lines spreading beyond the radio terminals. Similarly, by utilizing the extensive telephone networks radiating from London, other cities in Great Britain and also in the principal European countries were reached. North, south, east and west—the march of overseas telephony had begun.

To avoid haphazard expansion, a fundamental plan was formulated soon after the service was inaugu-

rated. The basic objective of the plan was to link the United States with the rest of the world as rapidly as technical progress and traffic requirements should warrant. This objective has been kept constantly in sight, and, as a consequence, telephone service has been extended steadily and in orderly fashion to country after country on all continents, despite changing world conditions which have taken us through the cycles of peace and war.

BY THE EARLY '30s, trans-world telephony had reached each of the great continents and the principal islands of the globe. This growth was dramatized on April 25, 1935, when a 'round-the-world circuit was established over links of radio and land lines extending from New York to London, Amsterdam, Bandoeng (Java), San Francisco, and back to New York again. Walter S. Gifford, then President of the A. T. and T. Company, and the late Theodore G. Miller, at that time head of the Long Lines Department, talked to each other over that long and historic voice highway from adjoining rooms at Long Lines headquarters in New York.

Mr. Gifford, who opened the London service in 1927, took part last January 7 in still another ceremonial conference call, this one marking the twenty-fifth anniversary of the service. Introduced by Cleo F. Craig, President of the A. T. and T. Company, who spoke from New York, Mr. Gifford, now Ambassador to the Court of St. James's, talked from Washington with Lord Salisbury, Lord Privy Seal, in London. In turn, Mr. Craig spoke with Sir Alexander Little, Director General of the British Post Office, who also was in London.

ork Times.

THE WEATHER

NEW YORK AND LONDON TALK FREELY, OPENING NEW RADIOPHONE SERVICE; FIRST PRIVATE CALL TO NEW YORK TIMES

LONDON HAILS NEW TIE

Radiophone Is Seen as Equal in Importance to Opening of Cable

SERVICE IN GREAT DEMAND

SIMPLICITY STIRS WONDER

31 CALLS ARE MADE IN D

Static Troubles Use Slightly, but Voic Usually Are Dist

TIME EXTENDED TO

Sir Evelyn Murray and W. Gifford Call Phone Now Link Between Nations.

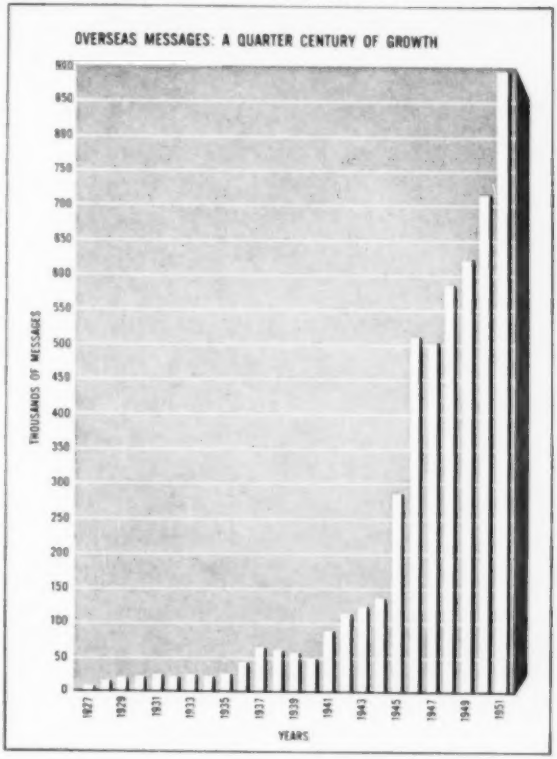
SOCIAL AND BUSINESS CAL

$5,000,000 IN DEALS WALKER

The opening of overseas service was a noteworthy event of twenty-five years ago

After confessing that he had found his original conversation in 1927 very exciting, Mr. Gifford stated that he was now impressed by "the realization that this service has become a regular, every-day part of life for so many people all

over the world. Overseas telephony has gone farther and faster than we could have hoped a quarter of a century ago." All participants in the occasion stressed the value to the world of what Sir Alexander called "a world-wide network linking the continents with one another and the remoter parts of the world."



In the past quarter century the number of overseas telephone messages has multiplied to almost 900,000 a year, and the one country within reach, Great Britain, has become ninety countries and territories

The War Years

When the first decade of overseas service closed the era of pioneering in radiotelephony, 65 countries had been linked by voice. Soon, however, the rate of expansion was slowed by war. Some new countries, principally in South America, were added to the network during the war years, and the volume of business to such countries increased very rapidly. But to the countries at war and to those affected by their nearness to hostilities, development halted, and the use of the service was generally restricted to purposes associated with the conflict.

Spectacular use of the overseas service was made by the leaders of the allied countries during World War II. The Army Signal Corps employed the facilities and personnel in providing backbone Army communication systems with war theatres abroad. Another important contribution of the overseas service in this period was the "three-minute furloughs" which it enabled lonely service men and women, far from home, to enjoy with their families. From military posts throughout the world came testimony to the splendid morale value of such conversations.

Post-War Development

The first post-war years, 1946 and 1947, were devoted to the restoration of service to those countries where the war had interrupted it.

London was the first foreign metropolis to be brought within reach of the Bell System's overseas telephone service

This was delicate and difficult work in lands where telephone equipment had been ruined, experienced personnel had been dispersed, materials and money were scarce, and major political changes were being made.

In 1947, earlier plans to expand the network of circuits and to secure better and speedier service for the customer were revived. Even before the war, it had been realized that good service required direct circuits to many additional countries, particularly those offering large volumes of traffic. The first step in this program had taken place in December, 1936, when Paris and New York were interconnected directly, the original routing via London being retained only as an alternative.

In the post-war years, the number of direct routes has been so increased that today almost two-thirds of the countries and territories reached by overseas service are linked directly to the United States. In addition to the establishment of new direct circuits, there has also been a large increase in the number of circuits on those routes where demand is heavy. There are now twelve circuits to Great Britain, ten to Hawaii, eight each to France, Germany, and Japan, and five each to Puerto Rico and Switzerland.

Today, overseas messages number

almost sixteen times as many as before the war. The volume for 1951 was 25 percent above the level of the previous year.

As additional countries and islands have been connected with the United States year by year, the number of telephones it is possible to reach has mounted until 96 percent of all those in the world may now be interconnected.

We also expect to add Turkey to the service shortly, and to improve the connection with Finland before the opening of the Olympic Games in Helsinki this coming July. Finland, which is now reached by means of a switched connection in Sweden, will be served by a direct circuit from New York.

The distances spanned by overseas telephony are vast. The path from New York to Buenos Aires, for example, stretches 5,300 miles, while that from San Francisco to Sydney, Australia, extends 7,400 miles. The total mileage in an overseas connection is often much greater than the overseas link alone, because the voice may be carried over long distances by land lines at either end of the transoceanic circuit. For instance, a call from the United States to Bombay, which is reached by connecting two radiotelephone channels at London, goes 8,000 miles eastward from New York, but if the calling party is in San Francisco, 3,000 more miles have to be added to the circuit.

Improved Methods of Operation

BECAUSE of factors which are peculiar to overseas operation, it is difficult to have service always as speedy, reliable, and easy to use as our own domestic long distance service.

This is part of one side of the overseas operating room in New York City

Although English is used by the operators here and abroad in establishing connections on the overseas links, language differences among customers naturally introduce some difficulties. Also, there are large time differences in most cases: to the caller it may be noon, to the person at the far end of the line it may be evening or even another day of the week. Moreover, the opposite ends of each circuit are operated by separate organizations which must join forces—often with some variance in their accustomed methods—in creating an overseas service satisfactory to their respective customers. And, finally, radiotelephone circuits are subject to atmospheric difficulties—static, noise, fading—which do not seriously affect domestic circuits.

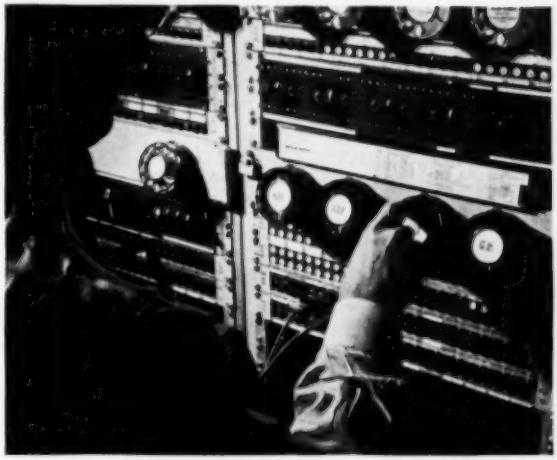
In spite of these operational problems, overseas calls now are established in about 15 minutes on the average, and for those between San Francisco and Honolulu a speed of about five minutes has been attained. These speeds represent great improvement since the war.

A major factor in this improvement has been the adoption of a simplified operating procedure, which is patterned on domestic methods. The originating overseas operator now makes the first attempt to complete the connection while holding the calling customer on the line. Previously, the operator had simply ob-

In the New York control room for overseas telephone service

tained the calling information and then released the customer. This information was passed to the distant overseas operator, who got the called customer on the line, after which the connection was re-established to the person placing the call.

Other developments which have greatly improved the quality of the service are the automatic control devices which strengthen the volume of weak voices before sending them on their long journey across the ocean and reduce the volume of very strong voices so they will not overload and cause distortion in amplifying equipment.



A technical operator working on ship-to-shore service dials for a connection to be established with a liner at sea

Economy in the Use of Frequencies

As the demand for overseas service has increased in recent years, a continuing problem has been the provision of radio frequency highways necessary to care for new routes and for added circuits on existing routes. Development of the greatest possible number of circuits on each of the limited number of radio frequency highways which can be made available to international radiotelephony has been an important factor in meeting this problem. This has required great skill and ingenuity on the part of the engineers who have the task of finding a sufficient number of celestial rights-of-way to handle the fast-growing traffic volume.

The earlier radiotelephone circuits used a 10-kilocycle band, which was the unit into which the radio frequency spectrum was ordinarily divided to obtain a single voice communication path. By making use of transmission techniques borrowed from land-line telephony, a means was later devised for sending two conversations simultaneously over each 10-kilocycle path.

Then the engineers went a step further. With the aid of supplemental equipment on each radio system, they provided a third conversational path within each radio frequency allotment. Nor has this process stopped. They have found that by widening the frequency band only enough to include 12 rather than 10 kilocycles, a fourth speech channel can be accommodated.

Economy in the use of frequencies is taking still another form. Changes in atmospheric conditions over each 24 hours make it generally necessary to assign a complement of four or more frequencies to the longer cir-

cuits, changing from one to another to secure, at a particular time, a single transmission path which is constantly clear and reliable. By sharing these assignments between two radio systems operated in widely separated directions, it is possible to move traffic over a pair of them and yet employ only about five frequencies instead of a total of eight. This is partly because antennas are used which sharply focus the transmitted radio signals, thus permitting simultaneous use of the same frequency on different routes. Again, it is sometimes possible to employ on another route one of a complement of frequencies which is not usable at a particular time on the route to which it is normally assigned.

With the help of all these techniques, derived from years of operational experience and close study of the nature of radio waves, daily operation of the approximately 130 circuits in the overseas service now employs only about 40 percent of the frequencies that would have been required with pre-war techniques. However, as the users of the service are constantly demanding more, radiotelephone engineers realize that perhaps their greatest task in the years ahead will be the provision of enough radio frequency paths to make possible adequate service. They not only will have to continue their search for methods which will provide more circuits from the frequencies assigned, but they will be forced to seek more frequency assignments.

Hawaii was brought within voice range on December 23, 1931

Service with Japan, re-established after the war, now leads in number of overseas messages

Service to Ships on the High Seas

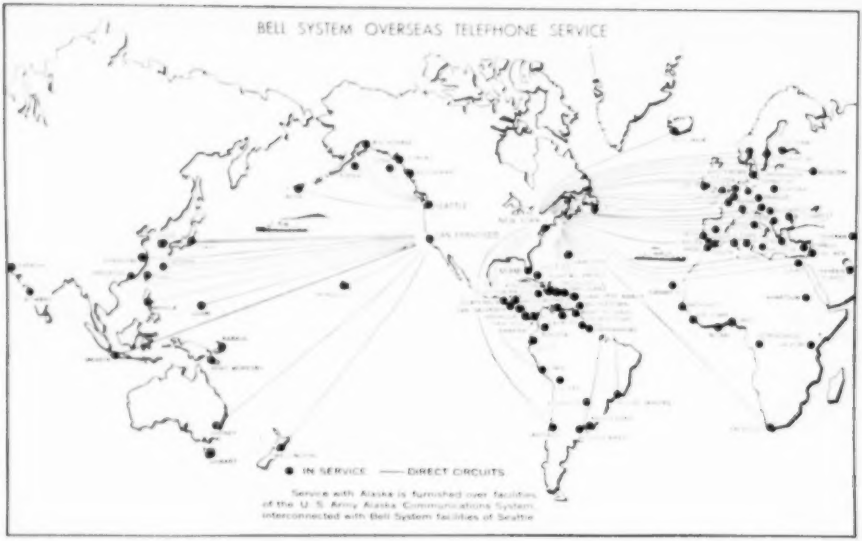
A VERY INTERESTING FEATURE of the overseas service is that furnished to ships on the high seas. This was inaugurated with the United States liner "Leviathan" in 1929. It has subsequently grown to the point that there sometimes are as many as 100 vessels on the high seas which have contact with our shore stations. However, the 20-odd passenger liners plying the trans-Atlantic lanes provide the bulk of this telephone traffic.

Depending upon their locations, these vessels may establish connections with the United States through New York, Miami, or San Francisco. During the past year over 20,000 conversations were carried on between customers in the United States and others aboard ships on the high seas.

The operation of service to ships at sea is similar to that to distant lands. However, it has the added complication of a moving distant terminal. This requires that the route and progress of the ships be known at all times, so that when it is necessary to reach a particular one, the frequencies and circuits most suitable to that ship's location can be used.

Reduced Rates

WHEN OVERSEAS SERVICE was opened, a three-minute call between


BELL SYSTEM OVERSEAS TELEPHONE SERVICE
IN SERVICE
DIRECT CIRCUITS
Service with Alaska is furnished over facilities of the U. S. Army Alaska Communications System, interconnected with Bell System facilities at Seattle

New York and London cost $75. Early in 1928, this rate was lowered to $45, the first of many reductions made possible by increased use of the service and economies from a multitude of improvements introduced in the past quarter century.

Today, the week-day rate for a 3-minute message from anywhere in the United States to most overseas points is $12.00. Rates as low as $4.50 apply to some of the shorter routes, and as much as $15.00 is paid for conversations to a few of the more distant places reached by switched connections. On many routes, reduced night and Sunday rates are in effect.

About 60 percent of the total volume of overseas traffic involves points along the northeastern seaboard of the United States. New York State customers are the leading users of the service, and account for about 40 percent of all the messages handled. California users are second in number, with 15 percent of the total traffic.

About 40 percent of the traffic is with Europe, 30 percent with Pacific Countries, and 25 percent with Pan-America. The countries with which we have the most calls are Japan, Hawaii, and Great Britain.

Overseas Partners

LONG LINES has some 65 partners in all parts of the world who join in furnishing the overseas service. To ensure smooth functioning and to meet day to day problems, it is necessary to keep closely in touch with the operating staffs of all these telephone organizations.

There is, in addition, the task of deciding upon general policies for long-range growth and of developing plans to implement them. This entails considerable correspondence with the distant partners about re-

sults, methods, rates, accounting practices—on every matter which goes to make up the fabric of good service. An example of one of the perplexities incident to such a far-flung service, and which presents special difficulties in unsettled times, is the different monetary units in various countries and the changing values of national currencies.

Future Development

IN THE first twenty-five years of overseas telephony, service has been established to most existing countries of the world, and it is apparent that expansion in that direction is limited. On the other hand, there is still a large field for further improving the reliability, continuity, and capacity of a service with such a fast-growing body of users.

Aside from the problem of securing sufficient frequencies for transmission paths, perhaps the greatest challenge to good overseas service by radiotelephony is the effect of adverse atmospheric conditions. This is a situation which is met time and again on long-haul radiotelephone circuits, particularly over the North Atlantic path, which is especially subject to magnetic storms affecting high-frequency radio transmission.

To avoid the Northern paths, on which such effects are most devastating to stability, plans are under way to establish additional secondary routes for use when the principal circuit to a point cannot be used because of atmospheric disturbances. At present, one such alternative route is set up on an experimental basis by way of Paramaribo on the northern coast of South America, as a secondary link between New York and Amsterdam, and the possibility of other alternative routes by way of relay points in both the eastern and western hemispheres is now being explored.

As the first quarter century of overseas service closes, it is interesting to realize that the service, which started as a special form of telephony, has come more and more to resemble regular long distance communication. That the public, which originally thought of overseas calls in terms of stunts or emergencies, has sensed this change is clear from its growing reliance on the service.

Here is a tool of increasing importance to finance, industry, and commerce . . . a voice channel for government and the armed forces . . . a means of broadcasting spot news from abroad . . . an invaluable intercontinental speech path. And that is how those responsible for the service want it to be regarded —as a ready aid when personal or business matters require a telephone call to points beyond the seas. In the past twenty-five years long strides have been made toward this goal, and in the future this global service will be made still more convenient and effective.

A Great National Resource

From the A. T. & T. Annual Report for 1951

SIX YEARS of post-war telephone progress have brought outstanding results. Together the Bell System and the Independent telephone companies of the United States now serve more than 45 million telephones all over the nation. This fast, convenient, reliable service is by far the best and most extensive telephone service in the world. No other country has such a resource.

This has not just happened.

Good telephone service depends on able people of good spirit. The men and women of the Bell System are competent, courteous, and devoted to their work. They are well trained. They have opportunity to get ahead. They also have competition, for promotions are made from the ranks on the basis of ability.

Good telephone service depends on sound organization. The Bell System is well organized for its task. Responsibility and authority are decentralized. At the same time, service to the public is unified. Operating, research, and manufacturing groups, working closely together, are dedicated to the common purpose of rendering the best possible service to the public at the lowest possible cost.

Good telephone service requires constant effort to improve methods and provide the best in equipment. Bell System research is continually opening up new frontiers. Equipment produced by the System's own manufacturing organization, the Western Electric Company, is of the highest quality and is supplied at prices that help to keep the cost of service low.

Good telephone service depends on the continuing full confidence of many hundreds of thousands of people to whom we look for capital. The Bell System is financially sound. Under regulation, it has been free through the years to earn enough to pay good wages, pursue effective research, reward ability, and keep faith with all who have put their savings into the business.

Finally, good telephone service is the result of a way of life—a tradition and policy of trying always for the best, a personal sense of responsibility, and the determination to meet individual and national needs no matter what the obstacles.

Results in 1951 bear witness to the effectiveness of these principles in action. The Bell System can be relied on to serve the nation well.

In This Rapidly Moving World, Opportunities to Expand The Usefulness of Our Services Never Seemed Better Than They Do Right Now

The Telephone Looks To the Future

George L. Best

IN THE relatively short time since World War II, the telephone business has been going through the most spectacular period of expansion in its history. Within the past decade the Bell System has grown more than it had over the entire previous sixty-five years, and the pace is still rapid.

It isn't necessary to recount here the hundreds of new central offices, the thousands of miles of new cables, the millions of telephones, and the billions of dollars of added capital investment which have gone into the Bell System in the past few years. These are well known.

What seems important is to pause now long enough to ask ourselves what has been responsible for this growth, where we are heading in the future, and what added responsibilities and opportunities this tremendous expansion is bringing us. That the future will be full of problems we can be sure. That it will be full of opportunity and great challenge is equally certain.

Since the present period is simply one phase of the longer history of our business, we can probably get a better perspective of what is happening today if we view it as simply one chapter in our progress. And what is happening in our business, of course, is only one phase—an extremely important one—of the social and economic progress of the country as a whole.

As a background, then, for understanding the recent past, and so preparing in a measure for the years to come, let us return briefly to the days before the telephone—to the time when, if a man wanted his words understood farther than he could shout, he had to go or send. That is only seventy-five years ago.

Before the Telephone

AT THE TIME of Bell's invention, only seven years had elapsed since the golden spike was driven in Utah, signalizing the completion of the first transcontinental railroad line, and a large part of the great era of railroad building still lay ahead.

While there had been in this country a steady movement westward from earliest times, nearly half the people still lived in the states along the Atlantic Coast, and four-fifths of the population was located east of the Mississippi.

The river steamer and canal boat still handled a large part of the long distance transportation of people and goods. Outside of towns, roads were bad or non-existent. The earliest automobiles were two decades off, and airplanes were only a dream in the minds of a few visionaries.

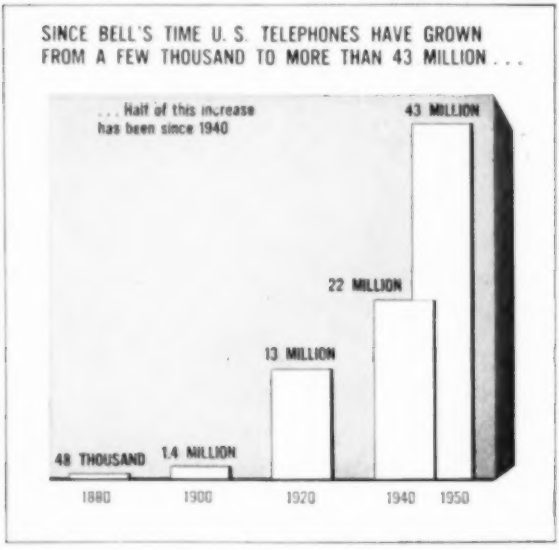
Communication near by was generally by personal visit or messenger; and to places farther away it was by letter or, on matters of greater urgency, by telegraph.

We were then largely a rural people. About three-fourths of the country's inhabitants lived on farms or in villages and very small towns.

The incandescent electric light had not yet made its appearance, and lighting was usually by oil lamps, except for some larger communities where illuminating gas was available. Heating and cooking were mostly by wood or coal, and the fireplace often did both. Housewives, almost without exception, baked their own bread and many churned their own butter. Fruits and vegetables "in season" came from their own gardens or from nearby farms, and at other times were the product of their own preserving and canning.

In most communities, the only place to shop was at the general store. The larger places boasted such specialized establishments as grocery, dry-goods, and hardware stores; but even there the customer found little choice in styles and grades of goods.

Most manufacturing was carried out on a small scale, in local shops and plants which got much of their materials and supplies from nearby areas. In many factories, hand tools and labor were still an important part of production. People



themselves, with the aid of the local blacksmith, could usually repair the normally simple machinery when it broke down.

There was nothing corresponding to our present-day radio, movies, and television. To the extent they could, people created their own forms of entertainment. They had not much time to devote to recreation, however, because adults and children alike were busy most of the time at their work and doing the necessary chores.

Picture, then, a society in which people lived and worked in more or less self-contained communities—and within those areas were largely dependent on their own efforts.

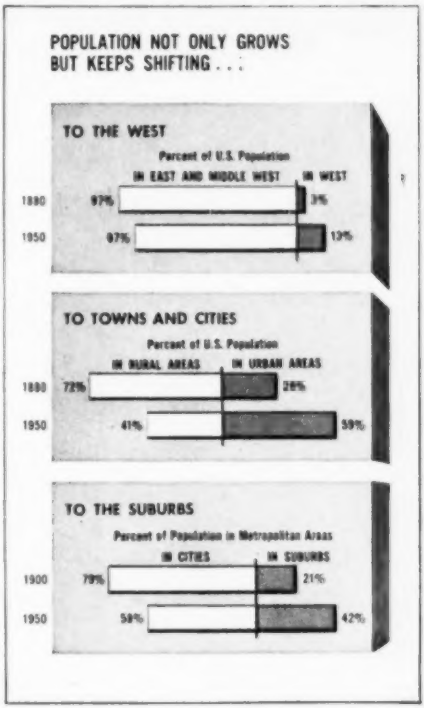
Picture, too, a pattern of home and business life in which there was little need to travel extensively, or to communicate except occasionally beyond a very limited area. And with long hours of work there was little time to devote to social contacts and recreation.

This, in brief, was the life our grandparents knew in the United States three-quarters of a century ago.

The Transition

THE CHANGE which has taken place within the memory of many now living is astounding.

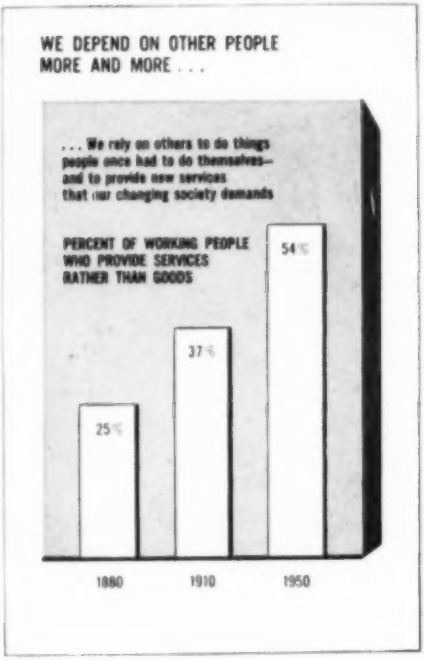
Our economy is no longer predominantly agricultural but has become increasingly industrial. The proportion of people who live in urban and suburban comunities has risen from a scant 25 per cent in Bell's youth to over 60 per cent today. During the same period there has been a great growth and



fanning out of population over the entire nation.

Beyond this, so greatly have our methods of production—both agricultural and industrial—improved, that a larger and larger proportion of our people can now devote their energies to providing a wide range of services. These include utility services of all types, increased facilities for education, new and expanded facilities for health and recreation, and a myriad of others which aid us in our homes and in our jobs.

In the home there is far less drudgery. True, we do not have the help of anywhere near as many domestic servants as before. However, there is not the same need for them—for there is a convenient ap-


WE DEPEND ON OTHER PEOPLE MORE AND MORE . . .
. . . We rely on others to do things people once had to do themselves—and to provide new services that our changing society demands
PERCENT OF WORKING PEOPLE WHO PROVIDE SERVICES RATHER THAN GOODS
25%
37%
54%
1880
1910
1950

pliance for doing almost everything, and the goods available in the modern store have enormously simplified the job of the housewife.

Add to this a telephone that brings members of the family speedily within speaking distance of practically everyone, an automobile, an oil or gas burner, a radio, and a television set, and you come up with a way of life such as our grandparents would never have dreamed of.

The change which has taken place in the conduct of business is no less spectacular. Business operations have become vastly more far-flung and specialized, and markets for goods have become literally nationwide. Factories can now obtain machinery and supplies and can subcontract work from one end of the country to the other, and can do these things with less time and effort than it used to require to do business with people nearby.

The Significance

PERHAPS the most basic social and economic change in all this—certainly the most evident one—is the far greater dependence we now have on other people.

In the home, the new aids available to the housewife have naturally encouraged her to abandon former skills in the kitchen and elsewhere around the house. Father no longer attempts to repair the sort of things he once did or to undertake the many odd jobs he used to be called on to perform.

Businesses, too, would have to do some pretty radical readjusting to carry on without the constant flow of help they get from other industries, oftentimes far distant. Specialists are our main reliance today.

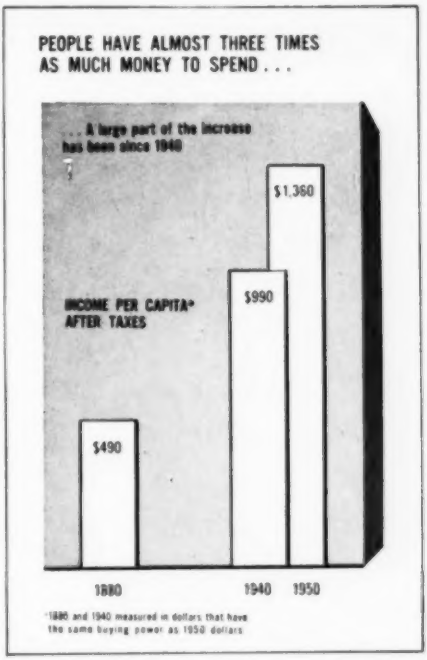
All of the new things at our disposal have contributed to a more efficient and pleasanter way of life. They have given us more opportunity to broaden our social contacts, both in number of acquaintances and in the distances over which they are scattered. But, inevitably, they have made us rely increasingly on assistance from others.

Clearly, the telephone is contributing in a very significant way to this important social and economic change. In fact, it would be hard to visualize without the telephone many of the things which we accept as commonplace today. The tempo and widespread nature of business operations depend heavily on it. Similarly, home life would be quite

different for most people without the aid it provides. And the telephone is playing an increasingly vital role in both military and civil defense.

To sum it up, we could not possibly depend on others, as we now do in our daily lives and actions, if we could not surely and quickly reach those on whom we rely, when we need them. The telephone enables us to do this.

The other face of the coin is that the great extension of business and social interests which have come with the development of our present way of life has had a pronounced influence on the use of both toll and local telephone service. This is the reason the Bell System has grown.


PEOPLE HAVE ALMOST THREE TIMES AS MUCH MONEY TO SPEND . . .
. . . A large part of the increase has been since 1940
INCOME PER CAPITA* AFTER TAXES
$490
$990
$1,380
1880
1940
1950
*1880 and 1940 measured in dollars that have the same buying power as 1950 dollars

The Recent Past

WITH THIS as a long-term background, let us now look a little more closely at the rapid changes which have taken place in recent years.

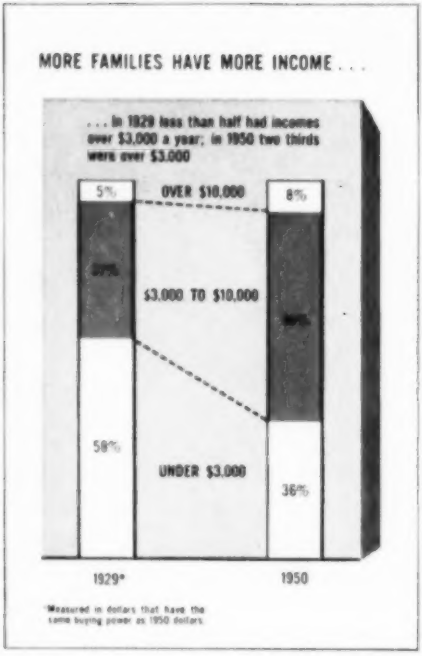
It is apparent that most of the causes of the great expansion in telephone service which we are experiencing are not basically new. The same broad influences we have seen since the beginning of the business have continued to affect us over the more recent past.

In addition, some new factors have entered the picture to give an extra spurt to the growing importance of telephone service in our lives.

For one thing, there has been a remarkable upsurge in population growth. In the 1940s, the increase was numerically the greatest in the country's history. It reflected a sharp rise in the birth rate from the low levels of the depression years, along with a continuation of the long downward trend of death rates.

Another important element is the change which has taken place in the last decade or so in the level and distribution of income. Not only has the total income of the people risen at a much more rapid pace than ever before—even after allowing for the rise in prices—but a much greater part of the increase has gone to people in the lower income brackets. The effect, naturally, is that more people are able to have more of the things that add to the comforts and enjoyments of living.

What is more, in this period of rising prices the rates for telephone service have not gone up nearly as much as the prices of most other things. Consequently, telephone


MORE FAMILIES HAVE MORE INCOME . . .
. . . In 1929 less than half had incomes over $3,000 a year; in 1950 two thirds were over $3,000
5%
OVER $10,000
8%
37%
$3,000 TO $10,000
58%
UNDER $3,000
36%
1929*
1950
*Measured in dollars that have the same buying power as 1950 dollars.

service is relatively more of a bargain than ever.

And last but by no means least is the accelerating rate of what, for want of a better term, we call the "telephone habit." This has been a growing force from the beginning of the business. But to cite just one example, the amount of time the younger generation spends at the telephone doing homework and conducting social affairs will tell us that something new and powerful has been added that did not exist when most of the readers of this MAGAZINE were teen-agers or younger.

These are the things which have combined to give us the current upsurge we have been and are experiencing in telephone growth.

The Setting for Tomorrow

WITH such a picture of past and present, the outlook for this business never seemed more promising.

We should not lack potential customers. Continued rapid growth in population, at least for some years, appears to be a reasonable expectation. There should be more homes, then, for this reason as well as to ease the war-time housing shortages which have never been fully relieved. Continued improvement in health and medical knowledge will mean that more people will live longer; and extension of pensions and broadening of Social Security coverage will mean that more elderly people will be able to maintain homes of their own.

The spreading out of population toward less developed areas of the country and the movement to the suburbs bid fair to continue. Decentralization of industries goes on apace.

As a nation, we are greatly expanding our productive capacity—particularly at this moment under the pressure of defense preparations. This, and our never-ceasing American urge to find better ways of doing things, should mean continued progress over the long run toward higher levels of national income, greater purchasing power of the people, and rising standards of living—(even granted that for one reason or another there may be temporary setbacks).

In addition to these, there is no sign of any let-up in the two important social and economic influences on our business which have already been

The future holds great opportunities for expanding the usefulness of telephone service

cited. Our dependence on other people in our day-to-day living is still growing rapidly. The acceptance of the telephone not as a luxury but as an essential element in American life—the "telephone habit"—is also growing. The result is surely a firm structure of continuing and growing demand for the services which we furnish.

Opportunity and Challenge

THE FACT that people have become more and more dependent on the telephone imposes on all of us engaged in the telephone business an increased responsibility to see that the service we provide is in every way the best of which the art is capable.

Some of our obligations in this respect are fairly obvious. Greater speed, greater reliability, greater economy are objectives to which telephone people have long been geared. The future holds ample opportunity to make even further progress along this well-trodden path.

Dialing of toll calls by operators was introduced only a few years ago, but well over a third of all toll board calls are now operator dialed. And just a few months ago nation-wide dialing by customers reached the stage of the trial it is now receiving in Englewood, New Jersey.

Developments such as these are the best evidence that progress toward the familiar goals continues and will continue to be rapid. Sometimes the process unfolds in ways which the customer can recognize, yet often too as improvements of which the telephone user is scarcely aware but of which he is the beneficiary.

There has always been more to it, however. Service in each era must be adapted to the needs of that era, which may be quite different from those in the past.

The early-day telephone was screwed to the wall, and the marvel of talking by wire at all was so great that nobody thought it a hardship to have to stand up to do so. However, as more people learned to use it, and found that it could serve different needs, it became apparent that this new method of communicating must be made more convenient if its full benefits were to be realized. Thus we moved along to the upright desk stand and then to the greater ease of the hand set.

The same pattern has been repeated over and over, as people's needs changed and were recognized: Wiring plans and key sets, to permit more efficient and more convenient use of customers' lines and telephones. Dial PBXs, to speed the calls of people in large or medium-sized establishments. Order-receiving equipment, to improve the efficiency of department stores and large service organizations. Telephone service to countries overseas, to ships, to motor vehicles, to trains. Networks for the transmission of radio and television programs. The list is indeed a long one.

It would be strange if the very influences which lie at the roots of our recent tremendous growth had not brought about material changes in the communication problems of at least some of our customers. It is an important part of our task to find out what changes have occurred in their needs and what we have to

do to help fill them. Ours is the responsibility to discover the new ways in which better, broader, and more convenient communication service can help them in their lives and in their work. Ours is the need for foresight and for bold imagination.

Assurance for the Future

THE most fascinating thing about the telephone business is that new and unexplored opportunities for service are continuously opening before us. That is as true now as at any time in the past—perhaps even more so.

The storehouse of ideas and discoveries which will ultimately find their way into better and broader telephone service is being expanded continually. Only those who are deeply immersed in the technical processes of research and development could hazard a guess as to how rapidly this new knowledge can be put to practical use.

There is no doubt whatever that the well tested teamwork of the operating, research and development, and manufacturing branches of the Bell System organization will continue, as in the past, to bring about continuous and rapid progress in the art. And our understanding of what the customer wants or needs must fully match our technical ability to find ways of filling those requirements.

Each major accomplishment simply opens up ways of making telephone service still more valuable by further effort. To be members of a team that has the opportunity to contribute so much to the material welfare of the nation is both an inspiration and a challenge to all of us in the telephone business.

Who's Who & What's What

(*Continued from page 3*)

foreign telephone administrations in connection with the A. T. & T. bulletin "Telephone Statistics of the World" is written in languages other than English, and ELIZABETH WRENSHALL finds her facility with foreign languages useful in gathering and compiling the data which she uses in her daily work in the Chief Statistician's Division of the Comptroller's Department. After making translations for the censorship authorities during World War II, Miss Wrenshall joined the A. T. & T. Company in 1945. This is her third contribution to this MAGAZINE, her most recent previous one being "Where the World's Telephones Are," in the issue for Winter '50–51.

Index Now Available

AN INDEX to Volume XXX (1951) of the BELL TELEPHONE MAGAZINE may be obtained without charge upon request to the Public Relations Department, American Telephone and Telegraph Company, 195 Broadway, New York 7, N. Y.

The "Dallas Philosophy" of 1927 Is Still Exemplified in An Attitude toward the Operation of This Business Which Enables Telephone People to Do Their Best

Long-Range Business Policies: A Case Study

Keith S. McHugh

There follows the text of an address given by the President of the New York Telephone Company before a meeting of the American Management Association in Los Angeles on January 16, 1952. Active in the Association since 1936, Mr. McHugh is at present a director and a member of its executive committee. EDITOR

ALL CORPORATE BUSINESSES begin with a charter or license of some sort granted by the sovereign state. These charters are given on the assumption that authorizing people to do business in the corporate form is for the public benefit. Even though the chartering is done on a more or less automatic basis, the implication still is that it is to the public's interest to have such organizations and that their many owners and employees serve the public's needs.

The companies which seek and obtain these charters, therefore, actually accept a responsibility to serve the public. The details of this responsibility are not very clearly stated by either the corporation or the state. The assumption is that if the company works within the laws, it should benefit the public.

However, the general public quite often is critical of corporate activity. Sometimes the ordinary human suspicion of size alone creates criticism. The laws governing business have been changed from time to time because of public criticism, and they can be changed at any time. There are few if any inalienable rights that business has if the public is of a contrary opinion.

IN RECENT YEARS, much of the attack on business has been focussed on profits. Profits are alleged to be excessive. Some of this criticism is

sincere, some is deliberately misleading. Lately, business men and some others have done much to explain the true function of profits, and effective educational work is continuing in many areas.

But not all the public has yet been convinced of the constructive business and social policies that have guided the managements of thousands of successful companies, large and small. I believe that an important reason for this is that management has failed to state its own long-range policies clearly and emphatically.

Perhaps, therefore, a clear statement of the policy which a corporation intends to follow in carrying out its responsibilities to the public might be useful.

I should like to suggest this possibility to you in management.

My suggestion is not based on theory but on experience, for I have worked under such a stated policy in the Bell System for many years. The Bell System is a regulated industry, and I fully appreciate that its experience may not be directly applicable to the general field of business.

But my impression is that operating under a stated policy might be as useful to general business as it has been to us in a regulated business. Such statements would naturally differ according to different conditions and also according to the conceptions of different managements.

As I said, my belief that the formulation and statement of a policy might be advantageous to all business comes from my own experience. With your forbearance, I should like to tell you what that experience has been.

The Only Sound Policy

I AM SPEAKING here tonight as an operating telephone man with one of the units of the Bell System—but not for or on behalf of the American Telephone and Telegraph Company, our parent company. The case history is the development and consequences of a publicly stated long-range policy to an operating telephone member of the Bell System team.

The early days of the telephone business were intensely competitive. There were two companies in most towns. The results were chaotic, and neither the companies nor the customers were happy. The people solved the problem by legislation permitting acquisitions and mergers, with broad regulation of service and rates of the remaining single company.

There emerged the Bell System, with eighteen operating units now serving thirty-seven and a half million telephones, of which the Pacific Telephone and Telegraph Company is among the largest; and an independent telephone industry of some 5,500 companies, serving around eight million telephones. Each of these units—Bell and independent—operates exclusively within its own territory. Regulation is by state authority as to intrastate business and by the Federal Communications Commission as to interstate business.

By 1927, public regulation of the telephone business had existed for approximately twenty years. Bell System Companies for many years had been evolving certain internal policies as to quality of service, rates, and relations with the public. No one man was responsible for these principles,

although some had more to do with them than others. They came, rather, from the combined experience, the hopes and aspirations, of the management throughout the System.

It seemed wise and timely to the then young president of the A. T. & T. Company, Walter S. Gifford, to state publicly the principles that guided the management. The occasion was the annual meeting in 1927 at Dallas, Texas, of the National Association of Railroad and Utilities Commissioners, an organization which includes all the State and Federal regulatory Commissions.

After reminding the assembled commissioners that they and the managers of the Bell System Companies were engaged in a common enterprise and that success in that enterprise depended upon mutual confidence and understanding, he said that he wished to state very briefly the principles that guide the management of the Bell System. These words were included:

". . . Obviously, the only sound policy that will meet these obligations [he had been speaking of obligations to investors in the telephone business and to the customers] is to continue to furnish the best possible telephone service at the lowest cost consistent with financial safety. This policy is bound to succeed in the long run and there is no justification for acting otherwise than for the long run."

A little later in the same talk he repeated the commitment in slightly different words:

"Our policy and purpose are the same as yours—the most telephone service and the best, at the least cost to the public."

This was an unusual speech at the time, but its significance was largely missed by the press and the public. It was unusual because it was one of the few instances of which I know where a business has publicly stated the basis on which it intended to serve the public. Even the financial world, which normally is quick to grasp the policies of all large companies, missed the significance of the statement. Yet this short straight-forward statement has been the guiding principle of our company and of all Bell System Companies. It is used so often within the business that its meaning is indelibly stamped on the daily lives and conduct of all telephone men and women.

Searching for the Best

THE POLICY is so simple that some of its significance may not at once be apparent.

First, we agree to furnish "the best possible telephone service." If that means anything, it means that we must always be searching for the best plant and equipment known to man; that we must continuously prosecute research in communications and keep up with the work of all others in the field throughout the world so that we can make the best results of all technology available to the customer.

It means that we must have telephone employees—management and workers—who not only are highly skilled, well trained, and efficient, but who are well paid and happy in their surroundings and life work, since the best service cannot be given unless these things are so. This commitment, part of the whole policy, was publicly stated two years later in the annual report of the American Telephone and Telegraph Company:

"While the Bell System seeks to furnish the public the best possible service at the least cost, the policy which recognizes this obligation to the public recognizes equally its responsibilities to its employees. It is and has been the aim to pay salaries and wages in all respects adequate and just and to make sure that individual merit is discovered and recognized."

The combined broad service policy also means an obligation for constant improvement in methods of operation. It means a willingness to undertake large money risks in developing and bringing new services to the user. Over all, it means a continuous effort to see that all telephone service is given first in terms of the customer's requirements and not primarily in terms of what may appear to be the Company's interest. And finally, it has meant the development of an internal system of competition between management men and women at all levels as a safeguard against the development of complacency in a business which has no direct competition.

The other half of the policy statement, namely, to furnish the best possible telephone service "at the lowest cost consistent with financial safety," is perhaps even more striking in its long run implications. For Mr. Gifford later in the same talk said:

". . . Earnings in excess of these requirements [those necessary for financial safety] must either be spent for the enlargement and improvement of the service furnished, or the rates charged for the service must be reduced. This is fundamental in the policy of the management."

In bald terms, this is a voluntary commitment to limit profits to those required for financial safety; an undertaking that any profits beyond these will be devoted either to service improvement or to reduction in rates or both.

Four Major Consequences

THERE IS TIME HERE to enlarge briefly on only four of the major consequences flowing out of this public statement of policy.

These are: first, the implied commitment to conduct continuous research; second, the promise in terms of the quality of men and women needed to do the service job, and the personnel policies flowing from this concept; third, the system of internal competition for management which developed from the service concept; and, fourth, the implications of a publicly stated policy of restraint in profits.

Actually, a policy of continuous research and development has been in existence since the earliest days of the telephone. The telephone business as we know it today would not exist had this not been so. The early instrument of Bell was crude, and you could talk intelligibly over a pair of wires for only a very short distance. It was at once apparent that if its usefulness was to be extended to include many in the same locality, to say nothing of interconnecting cities, new and wholly unknown areas of science and engineering must be explored. Yet the early entrepreneurs who backed Alexander Graham Bell and his novel invention must have been men of great faith and vision, because in 1878, two years after the invention, Bell wrote:

"It is conceivable that cables of telephone wires could be laid underground, or suspended overhead, communicating by branch wires with private dwellings, country houses, shops, manufactories, &c., &c., uniting them through the main cable with a central office where the wire could be connected as desired, establishing direct communication between any two places in the city. Such a plan as this will, I firmly believe, be the outcome of the introduction of the telephone to the public. Not only so, but I believe in the future wires will unite the head offices of the Telephone Company in different cities, and a man in one part of the country may communicate by word of mouth with another in a different place."

TRULY THIS was vision and faith! For no one, not even Bell, could have then had the slightest idea as to how the physical objectives could be accomplished.

By the time of the general policy statement in 1927, Bell Telephone Laboratories, Inc., as we know it today, was a physical fact. It includes at present about 6,900 people, of whom 2,400 are scientists and engineers. Over the years, the Laboratories has produced a continuous flow of new and useful developments in communications and allied fields, making it possible to telephone quickly, easily, and at a modest cost from any place in America to any part of the civilized world. It has made notable contributions to science generally. It has been a vital factor in our national defense in two wars and in preparing to prevent a third.

I will touch here only briefly on the business consequences of setting up a research and development organization to make its contributions to our public policy. I believe that this research has been vital to the growth and success of our business and that it has paid for itself many times over.

When one publicly commits one's self to research and development aimed at continuously improving one's service or product, certain responsibilities flow from such a course. One is the practical commitment to keep the work going in good times and bad. It takes years to bring together a top working team of scientists and engineers and this asset of the stockholders and of the public must not be dispersed thoughtlessly when the arctic breath of bad times is felt.

There are economic and social responsibilities which flow from fruitful research. As new discoveries of merit emerge, there arises an obligation to use them within the business if they will further the service policy; and there may be some that should be made available to anyone outside the business so that all can benefit.

THREE EXAMPLES of economic problems arising from this research may be of interest: overseas telephony; teletypewriter exchange service; and the new instrumentalities, coaxial cables and radio relays, that transmit telephone calls and television from one city to the other.

The first two are commonplace, and probably every man in this room has used them at one time or another. Yet each involved large financial risks to start, running into many millions of dollars, and great faith

and patience on the part of management before they were used in any substantial way. Thus overseas telephony was first introduced in 1927 and now reaches all parts of the world. At the end of three years only 16,000 calls were made per year. This month, the twenty-fifth anniversary of overseas service, we are handling calls at the rate of 900,000 per year.

Business needs beginning with World War II really made teletypewriter exchange service an important factor in communications, although it had been introduced ten years earlier. Now it has 28,000 stations, which originate 15 million messages annually.

Coaxial cables and radio relay systems are essential to obtaining economically hundreds of telephone circuits over one route and to transmitting television programs between cities. As to the television portion of these facilities, only the long range service policy and faith in the future of television has made Bell System Companies invest millions of dollars in them.

Each of these new business risks was without early prospect. Many would have said "Let some one else take the risk and develop these projects."

And then there are the problems of patents and of licensing others under one's patents which inevitably arise when one conducts fruitful research. Both the private and public aspects of this question are filled with difficulties for management.

But all told, a research and development program is a wonderful thing —in our case an essential thing if we are to fulfill our public promise.

The Essence of Performance

THE IMPLICATIONS of the service policy as to the men and women in the business might be thought of in terms of the more frequently used expressions "Labor policy," "industrial relations policy," etc. Actually I think they are much broader than these concepts, because our business is a personal service business. If telephone service, which requires direct relations with the user, is to be the "best possible," the measuring yardstick must really be with the user, not with the company. The kind of person the employee is and the attitude he has towards the customer will largely determine the user's final reaction. Superb technical service is only the start: the courtesy, the consideration for the customer's problems, the personal attitude of the employee, is the essence of performance.

There is not time to go into an extended discussion of the policies relating to telephone men and women except to point out one or two things about them which bear directly on the broad policy of the best possible telephone service. Thus we must select good people and train them well; we must give each the regard due him as an individual; each must have an equal opportunity to advance to the limit of his or her ability; we must pay good wages in comparison with other wages in each community, whether large city or small town; we must provide reasonable safeguards against accident, illness, old age, and death; and, of course, we must keep working conditions good at all times.

As our young men and women grow and succeed to management posts, we must find ways and means of assigning to each the maximum practical authority, because we know that men grow fastest with responsibility and because experience has taught us that the business succeeds best with the most decentralization of authority.

Finally, we must at all times train and develop our management people in terms of the problems of the business as we see them five or ten years from now, because we know by experience that it will then be a much larger and more complex business.

Internal Competition

WHEN THE AMERICAN PEOPLE substituted regulation for competition in the telephone business, one might think that the public was fully protected. Yet not even regulation can protect the public against a management which becomes complacent or lethargic—one which says to itself, "The service is good enough. Why make it any better? Why expand and take the risks of growth or change?"

Earlier managers of the telephone business foresaw this danger—the lack of the competitive urge—and adopted many precautions against this insidious disease of complacency. I would like to tell you briefly of one of these which I mentioned earlier —the development of a system of internal competition among all of our management people. This development flows directly from the policy of giving the best possible service.

We recognize the need on the part of our people in management for some strong competitive urge. We provide this by a very simple process: we measure the results of operations on a very broad scale down to the small supervisory unit and up to the company as a whole or, in other words, to the president. Thus each supervisory foreman's results in our Plant Department are compared first against those of like foremen in his district. Commercial managers' results are compared with others in the district. Chief operators' results are compared. These results deal not only with quality of service in a technical sense, and with costs, but with the courtesy and consideration exhibited by each supervisor's employees in their contacts with the public. They cover a broad field of measurements in terms of public reaction to our service and to the company.

As we move up the line from the small unit, these comparisons are continued and extended. Thus, district managers' results are compared. Department heads' results are compared. Finally, the parent company assembles these data and each Operating Company is able to compare its results and those of each of its major departments with the best results obtained elsewhere in the United States.

These data are invaluable not only in correcting and improving service from the customer's standpoint but in affording a sound background for promotion. We have, as you know, a long history of promoting from the ranks. I and each of my officers started at the bottom, in one department or another, and that is true throughout the Bell System. When opportunities for promotion occur, we try to get the best man, no mat-

ter where he is in the Company. For the more important posts, we look both within the Company and elsewhere in the System.

This internal competition, together with the constant urge for improvement in over-all operating performance, in good public relations, and in sound personal relations, works well in insuring the promotion of young men who demonstrate that they can accept responsibility. Each can go as far as his abilities will take him. The tradition of seniority as the principal or most compelling reason for promotion has had no part in our business.

Effect of the Policy on Profits

THE LAST PART of the public policy relates to profits.

It is significant that the policy uses the phrase "at the least cost consistent with financial safety." That does not mean some minimum rate of return barely sufficient for survival. It does mean that the management publicly undertakes to determine the profit requirements and to put any additional earnings into service improvements or reductions in rates or both.

You may well say to yourselves, "Why, that is all right for the Telephone Company. Its profits are going to be regulated anyhow under the law. But it isn't practical in my case." Actually, the commitment has had far more significance in our regulated business than you might think. It resulted in fourteen major reductions in long distance rates between 1926 and 1944—most of them without any urge from any one outside the business. Thus a day station-to-station call from Los Angeles to New York which cost you $15.65 in 1925 costs $2.50 today. And the speed of service and quality of transmission have been improved enormously in the twenty-five years since the policy was stated.

The fact that the Company has publicly stated that it asks no more than is necessary for financial safety imposes a continuing sense of responsibility on management. This affects the day-to-day judgment of all management people, regardless of the fact that our earnings are regulated. We believe deeply in this policy. It has brought continuing action in service improvements, and action in reducing prices when this was practical. Unfortunately, in the last ten years of sharply rising costs, we have not been able to reduce our rates and, in fact, all Companies have required rate increases. But even during this period there have been numberless improvements in service, many of which have helped to offset rising costs.

THE POLICY also produces a by-product which may not occur to you. Every young management man and woman learns it as part of his business bible. There is a certain indefinable pride in being associated with a business that not only says it will limit profits but does so—using profits beyond those required for financial safety to better the service or reduce the price. This, I believe, helps us get and hold the kind of people we have.

Lest any one misunderstand me, I want to make it clear that I believe in profits. I believe that the right of any citizen, under the American scheme, to make all the profits he

can providing he does not harm society in the process, has helped make our country great. But making all the profits he can in the long run will certainly be about the same thing as providing the best of goods and services he can in a competitive economy. If he is to be in business a long time, he must invest money in economies and improvements for the public benefit, since otherwise someone more enterprising will take his market. The man who thinks of his customer first is likely to last longer and prosper more in the long run than he whose eyes are fixed on his own immediate return.

Freedom to Do Our Best

I HAVE SPOKEN about what seem to me four of the major advantages of operating under a stated policy.

I am going to mention a fifth which is, in a sense, both a cause and an effect of these four and some others I have not mentioned.

This fifth advantage is that having a good policy and living up to it has persuaded the public to give us, in large measure, the freedom to do our best.

The policy said that we would give the customers the best service possible. They believed us and let us try. With that freedom we could spend money in research, put huge sums into plant improvement, pay good wages and get good people. In being allowed to do these things, we could render the good service we promised.

Business—the Basic Profession

NOW I HAVE some diffidence in making any concrete suggestions about the contents of a policy statement for any business but my own.

Nevertheless, I cannot help thinking that, as every business has an obligation to serve the public and as every business that has a pride in itself and a hope for the future must serve the public well, it might be useful to tell the public so, and also useful to tell the employees that such is the policy of the enterprise.

It might also be useful for a business to make it known that it was its policy to be a good citizen wherever it operated. The definition of a good citizen might include anything from good wages, good conditions of employment, support of local social services—all depending on the kind of business and the visions and convictions of the management.

But whatever its details, the statement would help give the public a picture of the character of the enterprise, and it would help mold people coming up in the business into that character.

Justice Holmes said: "Every calling is great when greatly pursued." Business—the providing of the goods and services by which men live and prosper—is the basic profession. For those who practice it to profess what it is they are trying to do is certainly a reasonable program.

The greater part of the people in the United States are in business. If the standards, aspirations, and objectives of business were constantly stated and lived up to, it might well increase our belief in our own purposes, to the benefit of everyone. And it is possible that the very act of stating objectives might lead to their clarification and also to the performance of them. A man cannot

well be proved lost who has made no determination of where he is going. But one who has stated where he is going may be held to the path by his employees, his customers, or the public generally.

THIS MANAGEMENT ASSOCIATION was organized so that men in business could tell their experiences one to another for whatever benefit to business in general such an exchange could give.

I have spoken of the effect of operating under a stated policy because over the years the conviction has grown upon me that having such a policy and living up to it has been perhaps the most effective thing the Bell System has done in my lifetime.

I do not know whether some kind of publicly stated policy would be equally useful to you. But I see no reason why it should not be, and this is why I am reporting my experience tonight.

A GREAT AMOUNT and wide variety of telephone services contribute essentially to this nation's defense. Fast two-way voice communication is essential to industry and industrial use of the telephone has steadily increased all through the organization and expansion of the defense production program.

Many defense telephone needs parallel those of World War II. But there is this difference: today the danger of enemy attack on the United States is greater, and measures to meet the danger have to be much more extensive and complex. Telephone facilities and services are an absolute necessity in the growing air defense system. The tremendous telephone growth of the last six years, and the availability today of new types of circuits, switching systems and other equipment, add greatly to our defensive strength.

New systems have been developed to spread air-raid warnings more quickly than in World War II. Private line networks have been installed for the Air Force to speed such warnings from regional control centers to key cities. To transmit the alerts from these key points to police and fire departments, Civil Defense units, hospitals, key industries and others, an entirely new system has been designed by Bell System engineers and is being produced by the Western Electric Company. This will enable the key point to "dial the color" of the alert—Yellow, Red or White. At all points to be warned the degree of alert is simultaneously indicated by colored lamps and a bell that rings a corresponding signal.

With these arrangements it will be possible to alert the entire United States in less than two minutes.

From the A. T. & T. Annual Report for 1951

The Old Ginkgo Tree

It was a beautiful old tree, lifting its green hands to the sun, welcoming a hundred springs, tall and sturdy through a hundred winters. Generations of children had played beneath its summer shadows, and in the autumn its leaves turned to burnished gold and there would be a cloth of gold on the earth beneath its branches.

It *was* a beautiful old tree, and the people of Frankfort, Kentucky, loved it. It was a ginkgo tree, brought from Japan by one of Commodore Perry's men more than a hundred years ago and planted there on the old Averill place, on Washington Street. The telephone company heard about it first from Mrs. Marvin Averill, who wrote:

"The telephone company has purchased the old Averill home, where I was received as a bride and spent many happy days. I live across the street now with my daughter. All the people of Frankfort love our old tree. We hope it will continue to live for many years to come."

That presented a problem to the telephone company; for construction was scheduled to begin on a new telephone building there on Washington Street. How could the tree be saved? Telephone company architects tried to redesign the building, or move it back on the lot. Every effort was made to save the old tree, but to no avail. There just wasn't room for both building and tree. It had to be cut down.

But the telephone company didn't let the matter rest there. After discussion with the local Women's Club and Garden Club, it was decided to take cuttings from the tree. These were placed in hot-houses to sprout, and when they are large enough to transplant, they will be given to the people of Frankfort.

The lovely ginkgo tree *will* live again—multiplied many, many times to bring pleasure to future generations of the children of Frankfort, Kentucky. And when they are grown, they will tell *their* children of the famous old tree that never really died at all.

There'll be a new generation of telephone people, too. And we hope they will remember how those who went before them showed the spirit of good neighborliness—how they loved the old tree, too, and helped it to live again to shade not one but a hundred doorways.

As the Armed Forces Continue to Expand, the Bell System Recognizes Its Obligation—and Opportunity—to Furnish Them More Than a Technically Good Telephone Service

Meeting the Service Needs of Service Men and Women

Justin J. Murphy

BACK IN 1947, when the Bell System's job of serving the communications needs of our World War II service men and women was just about wound up—when "attended" centers in military establishments were practically extinct and the last camp manager had returned to his normal responsibilities—any one who predicted that the System would be back "in the camps" in 1950 would have had a hard time finding an audience.

Yet on June 25, 1950, the now famous 38th parallel was crossed. And in the 22 short months since the Korean war started, our fighting forces have grown from 1,500,000 to an estimated 3,500,000 men. Uncle Sam has expanded, reactivated, or built new in this country over 500 army and navy establishments, air force bases, and hospitals. And the Bell System is matching this growth just as fast as the necessary facilities can be provided.

More and more, as the international situation forces our nation to build up its armed strength, it appears certain that Service for Service Men will be, for years to come, a prime responsibility and privilege of the Bell System.

Even without a national program of Universal Military Training, it's a rare young man these days who has not already had or will not as he grows older have a tour of duty in one of our armed services. And growing numbers of our young women also are now or will be service veterans. The uniform has an increasingly more permanent status in the wardrobe of our nation's youth.

The Bell System, therefore, in its role as the nation's prime communications supplier, has set out on a continuing basis to meet in full the human, personal needs for communication of our men and women whose normal life's pattern has been in-

The telephone center in a large military establishment. Signs and lights make it easy to find by night or day

terrupted by their patriotic obligations to their country.

Depending on their branch of service, the timing of their training, or their particular assignment, our service men and women may be in a Reception Center, Army Training Base, Staging or Rotation Area, Bomber Squadron Base, Naval Air Base, Air Force Base, Naval Training Station, or a permanent Fort—to name only a few. They may be in an establishment with from several hundred others up to as many as 50,000. And the pleasure of serving them is heightened by the realization that in many cases the calls they make here are likely to be their first completely personal experience with the Bell System and with Bell System service—particularly long distance service. First impressions are often lasting, so we want these to be pleasant, warm, and friendly. And we try to see to it that these initial impressions are confirmed time and again as our service men and women avail themselves of our facilities.

Following "John Q. Serviceman"

PERHAPS the best way to understand what our men and women in uniform want in the way of public telephone service is to follow the high spots in the career of one of them, whom we shall dub John Q. Serviceman, from the day he reports to his Induction Center, located in some large city near his home, to the day he is honorably discharged.

In the Induction Center, John Q.

will, in the normal course of things, take his physical and other prescribed tests. Assuming he passes them all, he becomes a full-fledged member of Uncle Sam's armed forces. And the first thing he'll do, when he steps out of line, will be to call home! Here starts a chain of telephone calls—a chain that represents a continuing challenge to the Bell System's traditions of service.

John Q. will go on to one of several Reception Centers located on a regional basis about the country. Here, with other "inductees," he will be strictly confined to a given area of the camp and, again, at his first opportunity he will call home—to let his family know he's arrived safely. At this point he knows he will be at the Reception Center for about six days—but he doesn't know where he goes next! So, he'll call again when his indoctrination period is over and he is ordered to move on with his detachment to still another location, generally a "training" base. Picture, if you will, bus- or train-loads of raw recruits arriving by the hundreds—and all heading for the telephone at their first opportunity. And picture the even more pressing desire of these same men to telephone when they are "moving out."

Bell System experience in such instances indicates that more is required than just installing enough public telephones. Ordinarily, the

Above: Inside a telephone center. At the rear, men are lining up to place their calls; those on the lounges are awaiting their summons from the loudspeaker

Below: Employees are carefully chosen for service at the busy switchboards at big Army and Navy installations

routine of the day means a rush for service in the evening hours, say from 7 P.M. to 10 P.M. The concentrated call load at that time requires the most efficient use of available telephones and circuits if the maximum number of men is to be served as speedily as possible. In the large establishments, therefore, "attended" centers have been established with from 10 to 30 telephone booths. Here specially selected and trained Traffic Department personnel will record John Q's call, invite him to relax in the comfortable surroundings of the center while we are handling his call for him, and then, when the distant party is reached, will page John Q. over a loudspeaker and direct him to an available booth. When he is finished, he sees the cashier, who will have a "timed and rated" toll ticket on his call, will quote the cost, including tax, and will accept his payment and thank him for it.

About 25 per cent of our attended centers are so-called "modified" centers, and differ in operation from the "full" attended center just described. For example, John Q., as he enters the center, receives a ticket with a number on it from an attendant. We found out early in the game that John Q. doesn't too much mind "standing in line"—but it's fatal to take care of any one else ahead of his proper turn. When his turn comes, his number is called over a loudspeaker and he is assigned the next free booth equipped with a coin telephone. He places his own call and, on its completion, is quoted charges and pays for his call by depositing coins in the coin box. If his call is delayed for any reason, an attendant handles subsequent reports for him. Change is made by the attendants—who will assure you from experience that John Q. definitely plans to run out of words before he runs out of change.

Most of John Q's calls are toll calls, and the methods just described apply to them. There is also in many places a large volume of local calling. In such instances, it is customary to segregate a group of booths with coin telephones connected directly to the local central office, so that local calls can be handled directly without effect on the toll traffic. The attended center—or centers, in the largest establishments—is, of course, supplemented by public telephones, well distributed throughout the camp. These are strategically located in or

Directional signs are strategically located throughout the camps

near PX's (the serviceman's general store), in service clubs, officers' and N.C.O. clubs, near theatres, bus stops, or in locations centrally spotted to reduce to a minimum the walking time required to reach a public telephone from any part of the camp. It has been found most effective to "group" such public telephones—that is, to install more than one public telephone at a location—rather than to spread individual booths throughout the camp. Outdoor booth locations are especially worth while, since they are available for use 24 hours a day.

This camp manager (right) is one of many Bell System men on such assignment

Behind the Scenes

AT THIS POINT in our narrative of John Q's experiences, it might be appropriate to look behind the scenes of the telephone service he is offered and consider the plans and objectives of the Telephone Company offering it. Generally, a military establishment of, say, 5,000 to 10,000 men will have a camp manager—a Commercial Department employee, who will devote full time or part time to the job, depending on the requirements. Such establishments will generally have one attended center. In the largest establishments, additional camp managers will be assigned on the basis of one for about every 15,000 men, and attended centers will be established on the basis of about one for every 10,000 men. System average is about five public telephones per 1,000 men, in the larger establishments.

Should the reader find that these formulas have not been applied to a location with which he is familiar, he will probably discover some special circumstance responsible, as for example, where much of the population of the establishment lives away from the grounds or is free to leave the grounds on completion of the day's responsibilities. In the Bell System, there are now about 100 camp managers on the job, and over 100 attended locations have been established. As this article is written, the Telephone Companies are pushing forward their plans for more

public telephones, more attended centers, and more camp managers to keep pace with the growth of the armed services.

The camp manager is the key man on whom depends the ability of our Companies to plan adequately, and in advance, for the telephone needs and comfort of our service men and women. Moreover, he is usually responsible for the provision of adequate administrative service for official military use. He constantly studies the telephone service requirements of the camp and negotiates for the buildings to house our attended centers.

Sailors are likely to find telephones waiting for them on or beside the dock when they come ashore

Since some military establishments are as large as a city, and their population as highly transient as a metropolis, the job of directing John Q. to the nearest attended center or public telephone is one that deserves and gets considerable attention.

Maps of the area, showing public telephone locations, are often displayed on bulletin boards and at other vantage points. Signs, large and small, standard or hand-made to suit the need, are spotted and spotlighted advantageously throughout the area. And each big sign location and power outlet needs clearance with the Post Signal Officer and Engineer.

In many of Uncle Sam's permanent installations, the Government provides its own cable plant and switchboard facilities. In such cases, Bell cable "meets" Government cable just outside camp, and the camp manager must negotiate for the necessary pairs in the Government's cable to serve the public telephone requirements—not only those already installed but those likely to be needed as the communications needs of John Q. and his buddies grow.

The camp manager constantly evaluates the quality of the service, and prides himself on being available to give aid and information to our public telephone users—and to handle their questions and com-

plaints. Jointly with our Traffic, Plant, Engineering, and Public Relations people, he arranges for furnishing and maintaining the attended centers. He recognizes the importance of adequate directories and sees to it that they are provided and replaced when necessary.

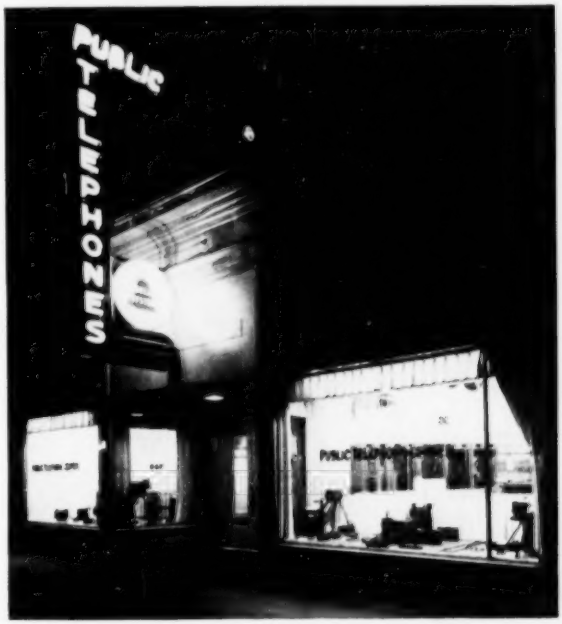
The People on the Job

RESPONSIBILITY for the operating forces at the attended locations does not fall to the camp manager. Ordinarily, a camp chief operator will be in charge of the traffic operating forces. It is significant of the spirit with which the Bell System and its people have approached this job of "service to service men" that departmental lines are practically nonexistent in these military establishments.

The author has noted with pride how often the chief operator and her attendants have passed on comments and suggestions for improved service arrangements in and outside of the center, and how eagerly suggestions by the camp manager along the lines of overtones of service or protection of funds have been received by the Traffic personnel. Plant installation and maintenance people too go "all out" when called upon to do this job—and they're called on just about every day. These locations get top priority at the hands of our Traffic and Plant Engineers. And it goes without saying that the job done by our Long Lines forces is one of the important foundation stones of our service to service men.

In selecting furnishings and appointments for attended centers, the Companies have been guided by the desire to offer neat, attractive quarters which will make the service man feel welcome when he comes to place his call and comfortable during such unavoidable waiting intervals as he may experience.

Because of the high concentration of calling in the evening hours, an effort has been made to select furni-



In cities near military establishments, public telephone service is expanded to provide for the requirements of service men and women

ture which will provide maximum seating capacity. Writing desks equipped with stationery are often provided, as are reading tables and copies of popular magazines. Pictures, perhaps depicting scenes of interest within easy traveling distance and time from the camp, decorate the walls. The Bell System zone map showing toll rates to points across the country is found in most centers, and has proven especially helpful to service men in estimating the cost of their calls before placing them. Heating and cooling arrangements are provided as appropriate to the location. In short, everything within reason is done to make their visit with us a pleasant one.

Oversized booths for wheel chair patients are available in hospitals

In selecting attendants for the center, particular care is exercised to assign people of warm personality. One need spend little time in a military establishment to sense how important it is that our people be willing and anxious to tune in with the serviceman—most often to help him place his call, but frequently just to give him a sympathetic person to talk to about the folks or the girl back home.

Often our attendants are the sisters, wives, or mothers of service people. Several Companies have been quite successful in hiring the wives of officers or enlisted men on the base. Camp managers quite often are ex-servicemen, who approach their assignment with sympathy and understanding because they too have been through the mill. All our people agree that it's a particularly interesting job, and attest that the satisfaction of helping our service men can't be evaluated by one who has not had the privilege of serving them.

Wherever He Goes

BUT LET'S GO BACK to John Q. Serviceman, who was about to leave his Reception Center for a Training Center. No doubt his calling needs will be much the same in the new location. Certainly he'll call home on arrival and again before moving out. Perhaps now, though, he'll have more freedom: will be able to arrange for visitors from home, and now and again will get away from camp on leave—generally of short duration. Plenty of need for telephone calling here—though perhaps for not as urgent reasons.

Portable telephones provide service for patients who are confined to bed

Should John Q. go to Norfolk, Va., or San Diego, Calif., he will find attended centers "down town"—designed to supplement the normal public telephone facilities of these cities and to further the comfort and convenience of our service men and women. In other cities near military establishments, the public telephone development in the center of town will have been reinforced to meet their requirements.

Having completed his stateside training, John Q. now goes to a staging area. Here he is prepared to go overseas —and here particularly the telephone must serve well. That last call home, with brave words of hope and good cheer despite the undertones of fear and heartbreak, must not go uncompleted because all trunks are busy or because the clock runs out before John Q's ticket is reached or his number called.

Here, special efforts are made to be sure that the service arrangements previously described are adequate to the peak loads they are called on to handle. We'll stay open and keep trying until the last call is completed or every possible effort has been made to get the call through. To distribute the load over all available facilities, camp managers often will take groups of service men, in buses provided by the Telephone Company for the purpose, to other centers in the camp. Where buses are not used, Company cars or government vehicles are pressed into service. "The call must go through" is a motto to live by for our service men and the Bell people who serve them.

When John Q. Comes Home

Now let's assume that John Q. has completed his service overseas and is about to return from Korea or Europe. Perhaps he's been relieved, will rest awhile at home, and then return to camp for reassignment. Perhaps he's about to be honorably discharged and the war is ended for him. Perhaps he's been hurt and is returning for hospitalization and convalescense. No matter what the reason for his return, it's "odds on" that the first chance he gets, he'll head for a telephone to call home.

If he comes through San Francisco

or New York City, as it's likely he will if he comes in by ship, he'll find public telephone facilities ready and waiting for him in the reassignment and displacement camp to which he'll be transported. Navy men will find special public telephone arrangements provided right on the docks or in groups adjacent to the dock at which their ship is moored. Moreover, Company telemobiles may be pressed into service to meet John Q.'s need.

If he is confined to a hospital, portable hand telephones, lightweight head sets for "hands-free" use, or coin bedside service (a coin box mounted on a telecart) will be available. For ambulatory patients, public telephone booths will be found in wards, the halls, and the lobby. Hooks will be found on which the injured can hang their crutches while using the booths, and oversized booths with special wide doors are provided for wheel chair and litter cases.

THE BELL SYSTEM has gone "all out" to give our country's service men and women the service they need where and when they want it. But Army camps, air force bases, and even some naval stations have a way of springing up in places where there are little or no facilities. Then, too, shortages of critical materials, such as copper, have added to the difficulties of the problem. But there has been no shortage of Bell System understanding or of determination to do the job. Bell people, dedicating their know-how and their energies to the men and women who have dedicated their lives to our country's defense, have made giant strides in meeting their telephone service needs. That these efforts are appreciated is amply demonstrated by commendatory letters written to the Companies, comments made to telephone people, and remarks written in Guest Books often provided at attended centers.

But the greatest testimonial of all, to any one who has been there to see, is the smile of happiness that lights up the faces of so many of our men and women in uniform when the magic of the telephone brings them close again—voice to voice—with their loved ones at home.

And in the years to come, as our service men and women move on to other successes in their peace-time occupations, we hope they will all remember with pleasure the real effort made by all Bell System people to see that their calls went through.

The men and women of the Bell System are its greatest asset. They served the nation well in 1951. Their ability and good spirit are the foundation for confidence in the years to come.

From the A. T. & T. Annual Report for 1951

Nearly Sixty Percent of Today's Telephones Are in the United States, Which Has a Telephone Development 20 Times the Average for the Rest of the World

How the Telephones of the World Are Distributed

Elizabeth Wrenshall

TELEPHONICALLY SPEAKING, "75" was the key number for the year 1951. There were nearly 75 million telephones in service throughout the world on January 1, 1951, and on March 10 of the same year the 75th Anniversary of the invention of the telephone was celebrated.

The world figure reflects a gain of 4.5 million telephones, of which more than half were added in the United States. With 43,003,832 telephones in service, the United States had 11 million more than all other countries combined. Although this country had little over six percent of the world's population, it had nearly 60 percent of the telephones, all of them operated under private ownership. More than two-thirds of the telephones comprising the global network are so operated.

The telephone has become an integral part of every-day life in the United States. Here, on January 1, 1951, there were twenty-eight telephones for every 100 persons, or 20 times the relative development obtaining in the world outside the United States. During the year under report, there was no change in the relative position of the principal countries either as regards number of telephones in service or telephones in proportion to population. There were ten countries having more than one million telephones in service: United States, United Kingdom, Canada, Germany, France, Japan, Sweden, U.S.S.R., Italy, and Australia. Six large countries reported more than 15 telephones per 100 of their population: United States (28.1), Sweden (23.9), Canada (20.8), Switzerland (19.9), New Zealand (19.1), and Denmark (16.9).

The great preponderance of the world's telephones are to be found in the industrialized countries of North

TELEPHONES IN CONTINENTAL AREAS
January 1, 1951[a]

Continental Area	Total Telephones			Privately Owned		Automatic (Dial)		Connecting with Bell System	
	Number	Per Cent of Total World	Per 100 Population	Number	Per Cent of Total Tels.	Number	Per Cent of Total Tels.	Number	Per Cent of Total Tels.
North America	45,933,800	61.4	27.5	45,554,400	99.2	31,923,300	69.5	45,916,800	100.0[b]
Middle America	555,000	0.7	1.1	511,100	92.1	385,600	69.5	549,000	98.9
South America	1,815,000	2.4	1.6	903,900	49.8	1,355,900	74.7	1,691,300	93.2
Europe	21,300,000	28.5	3.5	3,149,900	14.8	14,772,600	69.4	19,422,400	91.2
Africa	895,200	1.2	0.5	15,100	1.7	579,400	64.7	753,400	84.2
Asia	2,655,000	3.6	0.2	197,700	7.4	1,152,000	43.4	1,435,200	54.1
Oceania	1,646,000	2.2	11.9	109,600	6.7	1,040,800	63.2	1,631,900	99.1
World	74,800,000	100.0	3.1	50,441,700	67.4	51,209,600[b]	68.5	71,400,000	95.5
United States	43,003,832	57.5	28.1	43,003,832	100.0	30,170,000	70.2	42,994,863	100.0[c]

[a] Partly estimated; data reported as of other dates have been adjusted to January 1, 1951.
[b] Less than 0.04 per cent do not connect.
[c] Less than 0.03 per cent do not connect.

America and Europe, which accounts for the relatively low development of the world at large. However, the value of telephone service is gradually being recognized in regions which do not enjoy our high standard of living. In Muscat, for example, on the Arabian Peninsula, where inland transport is largely by pack animal and where commercial interest centers in the cultivation of dates and in camel breeding, installation of a telephone system was undertaken during the past year. The nomadic Trucial Shiekhs on the Gulf of Oman, concerned with expanding their pearling and their fishery trades, have recently contracted for installation of a telephone system.

Telephone Statistics of the World, which presents statistical data relating to distribution of the world's telephones, is compiled annually by the Chief Statistician's Division of American Telephone and Telegraph Company. The data contained therein are supplied through the courtesy of officials of some 300 foreign telephone administrations.

For the purpose of this bulletin, only those telephones are counted which are available to the general public. Thus are excluded private intercommunicating sets and private line telephones used by railroads and other agencies which do not have connection with a commercial telephone system. Statistics are presented in so far as possible as of January 1, 1951. Those supplied for other dates are adjusted to January 1, 1951, in the computation of continental and world totals. Where current official data could not be obtained, as, for example, in the case of the U.S.S.R., the estimates shown are based on the latest data available.

Statistics showing the number of telephones, by countries, which may be connected with those of the Bell System are included in the bulletin. Overseas connection is still restricted

in varying degrees within certain areas as a result of war conditions. For example, radio telephone service between Austria and the United States after the war was available only to members of the occupation forces, but international service has recently been resumed in the American Zone of Austria. Physical facilities exist for potential connection of a telephone in the United States with approximately 96 percent of all the telephones in the world.

Telephones Considered by Large Geographical Areas

FOR THE PURPOSE of analyzing the distribution of telephones, the land area of the world has been divided into seven major regions, based on the continents, sub-sections of the continents, and island groups. Subdivisions have been included within these major regions either because they are adjacent, or because they are to some degree homogeneous.

NORTH AMERICA

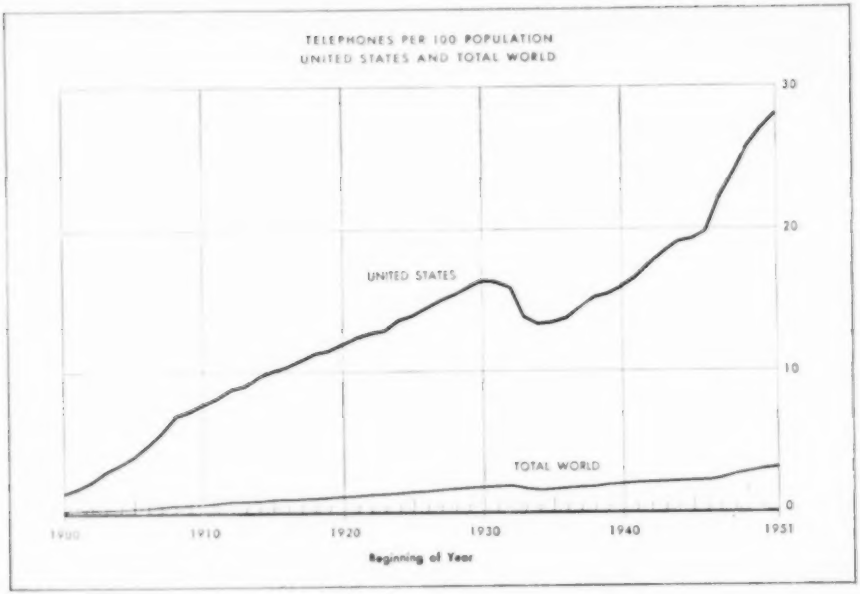
North America contains 16 per cent of the world's land area, seven percent of the world's population, 61 percent of the world's telephones. The regions here considered under the heading of "North America" include all of the continental area north of Mexico, plus the islands of St. Pierre and Miquelon, and Greenland. More than 99 percent of North America's total of nearly 46 million telephones are operated under private ownership. About 94 percent of North America's total telephones are in the United States.

The Bell System, comprising the American Telephone and Telegraph Company and its 20 Principal Telephone Subsidiaries, operated 82 percent of this country's telephones on January 1, 1951. The remaining 18 percent were owned and operated by about 5,500 independent telephone companies and 60,000 rural or farmer lines and systems. If this country had the same telephone density as exists in Europe, our entire population would be served by less than 5.4 million telephones, or about as many as there are in the three cities of New York, Chicago, and Los Angeles combined.

Contrary to the situation obtaining in the majority of foreign countries, good telephone service is available in rural areas of the United States. The Bell System has been extending and improving service in this field, installing rural telephones at the rate of 1,000 each work day.

A SUBSTANTIAL proportion of the telephones in service in most foreign countries is absorbed by their respective principal cities, whereas in the United States a relatively small proportion of our total telephones are located in our largest metropolitan areas. The following list of countries, the principal city in each, and the percentage of the nations' total telephones serving such cities is illustrative: Argentina, Buenos Aires, 63; Brazil, Rio de Janeiro, 39; France, Paris, 26; Ireland, Dublin, 57; Italy, Rome, 19; Portugal, Lisbon, 42; United Kingdom, Greater London, 30; United States, New York, 7, Chicago, 4.

Canada, with 2.9 million telephones, has the third-largest telephone system in the world. The tele-



phone density, 20.8 per 100 of the population, is exceeded only by that of the United States (28.1) and Sweden (23.0). Canada has nearly 3,000 telephone systems, many of them small cooperatives which operate rural lines in Saskatchewan, Alberta, Nova Scotia, and Ontario. More than two-thirds of the total telephones serving the Dominion are in the Provinces of Quebec and Ontario; more than one-fourth of Canada's total are in the two cities of Montreal and Toronto.

In Alaska, fifteen privately-owned companies operate 17,841 telephones. Toll service within the Territory and international radiotelephone service are provided by the Alaska Communication System, which is a part of the United States Signal Corps. The Alaska Communication System also operates 78 telephones on a commercial basis.

The French Territory of St. Pierre and Miquelon, a group of islands near Newfoundland, has a government-owned system comprising 137 telephones.

Greenland, which is Denmark's only colonial possession, is more than one-fourth as large as the United States, but four-fifths of its area is covered by ice cap. Greenland has no commercially operated telephones, the existing system being available only to military personnel.

MIDDLE AMERICA

Half of Middle America's telephones are in Mexico, and half of Mexico's telephones are in its capital, Mexico City. Virtually all of the telephones in Mexico are operated under private ownership.

Cuba, with 122,668 telephones, has the second largest system in Middle America. Seventy percent

of its telephones are in the city of Havana.

Bermuda, with 17 telephones per 100 inhabitants, leads all other countries within this grouping in regard to telephone density, followed by the Canal Zone with 7.6 telephones per 100 people.

SOUTH AMERICA

About four percent of the Western Hemisphere's telephones are in South America. Argentina, with 798,391 telephones, has more than any other country on that continent. Nine-tenths of Argentina's telephones are operated by the government, the balance by two private companies.

Brazil ranks second in respect to number of telephones in service in South America, with 549,700. With the exception of a small departmental system operated by the government, Brazil's telephones are privately owned.

In considering telephones in proportion to population in regions grouped under the heading of "South America," the highest development obtains within the little Crown Colony of the Falkland Islands, where 305 telephones serve the 2,300 inhabitants. On the continent, Argentina ranks first, with 4.6 telephones per 100 persons, followed by Uruguay, with 3.8.

About half of South America's telephones are operated under private ownership.

EUROPE

Europe ranks second to North America in respect to number of telephones. Of the world's 24,358,300 government-operated telephones, three-fourths are in Europe. Only 15 percent of that continent's telephones are operated under private ownership. As Europe's population is about one-fourth of the world aggregate, the telephone density is relatively low. Europe, on January 1, 1951, with an average of 3.5 telephones per 100 persons, had attained about the same telephone development as that reached by the United States in the year 1904.

The largest European system is that of the United Kingdom, with 5,433,614 telephones, operated entirely under government ownership. This system, considered on a world basis, ranks second to that of the United States in size.

Germany has the second-largest telephone system (2,725,213) in Europe. While accurate data in respect to Eastern Germany and Berlin are not available, an official estimate indicates that some 88 percent of Germany's total telephones serve the Western Zone.

The telephone system of France (2,405,802) ranks third in size in Europe, fifth in the world. Considering telephones in proportion to population, France's development of 5.7 telephones per 100 persons is relatively low.

Sweden has maintained its usual high degree of telephone development with 23.9 telephones per 100 population, thereby ranking second only to the United States in this respect. The government operates Sweden's telephones except for some 2,000 which serve half a dozen small communities.

Switzerland ranks second among European countries as regards telephone development, Denmark third.

AFRICA

The population of Africa is relatively small in proportion to its area, for this continent has, as have the Americas, large desert areas which have remained uninhabited. Africa has 22 percent of the world's land area, eight percent of its people, 1.2 percent of its telephones. The only privately-owned telephones in all of this vast continent are those serving two towns in Spanish Morocco, the Tangier Zone of Morocco, and the Spanish colony of Guinea, a total of 15,016, leaving more than 98 percent of the continent's total under government ownership. Eighty-five percent of Africa's telephones are in comparatively small areas along the north coast and in the southernmost territory, the Union of South Africa.

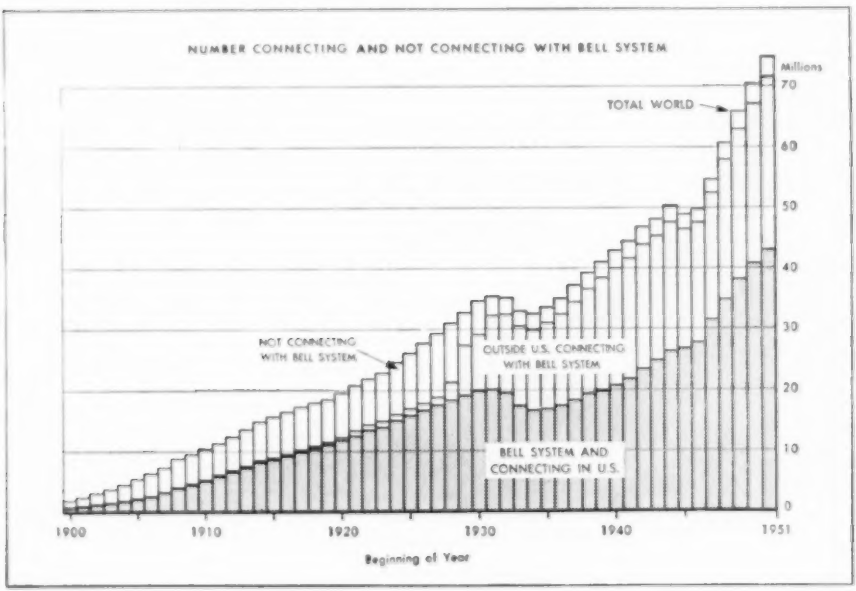
The Union of South Africa, with six percent of Africa's population, has 50 percent of its telephones. All of the Union's telephones are operated by the national government except those serving the business center of the city of Durban where they are operated by a municipal corporation.

Egypt has the second-largest telephone system in Africa, with an estimated 115,500 telephones, more than one-fourth of them being in Cairo.

Algeria's system, operated by the government, ranks third in size on this continent. About one-third of the telephones serving the Algerian territory are in the city of Algiers.

ASIA

The population density in Asia is extremely high, being more than two and one-half times as great as that of the world as a whole. Although more than half of the world's people live in Asia, they are served by



less than one twenty-fifth of the world's telephones.

More than two-thirds of Asia's telephones are in Japan (1,802,558). Japan's telephone density of 2.14 per 100 persons is the highest in Asia, closely followed by that of Israel (2.11). The telephone systems in both countries are government operated.

Although China ranks second in respect to number of telephones in service in Asia, with an estimated total of 225,000, it has more than one-third of the population of the continent, or about one-fifth that of the total world, resulting in an extremely low telephone development. There is only one telephone available, on the average, for every 1,820 persons in China. India's telephone system is third-largest in Asia, but here, too, the telephone density is low. India, on the average, has but one telephone for every 2,150 persons.

OCEANIA

Australia and New Zealand together account for a major portion of both population and telephones in Oceania.

Seven-tenths of Oceania's telephones are in Australia. Telephone distribution in Australia's six largest cities is relatively even, ranging from 13.7 per 100 persons in Perth to 18.7 in Melbourne.

New Zealand's telephone system ranks second in size and in density among those serving countries in Oceania. In New Zealand, the telephone development of the country as a whole is about equal to that of the average of the four largest cities.

Hawaii, with 21.9 telephones per 100 of the population, ranks first in Oceania in telephone density. A privately owned company operates all of the telephones in service within the Territory.

Conversations

TELEPHONE CONVERSATION data are not available for all countries. The United States showed 371 telephone conversations per capita for the year 1950, compared with 362 for Canada. As regards other countries served by the world's largest telephone systems, the United Kingdom reported 67 conversations per capita, Western Germany 43, France 37, Japan 67, and Sweden, with the world's seventh-largest telephone system, reported the relatively high calling rate of 313 conversations per capita.

Urban Telephone Development

NEW YORK was served by the world's most extensive urban telephone system, and, speaking telephone-wise, Greater London was the best equipped among foreign cities. Washington, D. C., attained a higher degree of telephone saturation than any other large city in the world, with 60.6 telephones per 100 persons. The only large foreign city to approach Washington in this respect was Stockholm (47.9). Telephone density in most of the large cities of foreign countries is appreciably lower than that obtaining in the great metropolitan areas of the United States, in spite of the fact that a large proportion of the telephones in foreign countries are concentrated in their capital cities.

Running Into People

By Tom Seddon

In the Bell System he would be known as an installer. His tale is quoted from the Post Office Magazine, *publication of the British Post Office, which operates the telephone service in Great Britain.*
EDITOR.

SOME jobs are exciting. I was a telephone fitter for ten years and found it the most exciting job in the Post Office. I never knew whom I was going to run into next. Nearly every morning I was allotted a new job, and I met many people—some of them famous.

Dame Ellen Terry, the famous actress, playing in Liverpool, found me under her bed at her hotel one afternoon.

"And what are you doing in my bedroom, young man?" she said roguishly. "Nothing wrong, I hope, madam," I replied, and we both smiled.

I ran into Sir Thomas Beecham in the corridor of the same hotel. "Pen, ink and paper," he demanded from the chambermaid, flashing a glance at me.

I could guess what he was going to do: alter a score or write a snappy letter about the British public's lack of appreciation of good music. I admire Sir Thomas as a fighter.

I missed a budding M.P. by three inches at the Wallasey Town Hall. He was handing in his nomination papers and I was carrying a ladder. He ducked and retained his head, but I think he lost his seat later.

Over in the Isle of Man I was working on the landing of a private house in Douglas, when a bedroom door opened and out tottered an old man in pyjamas. He was so frail that I jumped to assist him.

"Who are you, young man?" he asked. I explained I was a Post Office fitter.

"Could you help me on with my dressing gown," asked the old man. And thus I had the honour of assisting Sir Arthur Conan Doyle, the famous novelist, who put the Isle of Man on the map. He died a few weeks later. . . .

The telephone fitter, in addition to running into people, runs into many interesting events. I remember helping to wire the Argyle Theatre, Birkenhead, for its first B.B.C. broadcast; wiring the House of Keys in the Isle of Man for the official opening of the submarine cable from England to the Isle of Man; and helping with a few T.T. Race* telephone hook-ups. The Isle of Man telephone staff run the telecommunication system linking up all the main points around the Course to the grand-stand and, on race days, manning the posts. . . .

One hot summer day I trudged out to a large house in the wilds. I rang the front door bell. The maid allowed me in, but we were stopped in the hall by the mistress.

"Well, well," she said, shaking my hand, "fancy meeting you here! Mary, this gentleman will have afternoon tea with me in the drawing room."

An old friend? Why, certainly, she was. One of my subscribers from Wallasey, whose house I had visited on maintenance duties years before. She informed me that she had married a Canadian lumber-jack millionaire. I drank her health in tea.

* Tourist Trophy motorcycle race.

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